PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE

A THESIS SUBMITTED TO

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT (PUNJAB)

IN THE PARTIAL FULFILLMENT

FOR THE AWARD OF DEGREE OF

DOCTOR OF MEDICINE

IN

GENERAL MEDICINE

2024

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Dedicated
To My Family,
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Teachers

ACKNOWLEDGEMENT

I bow my head to ***The Almighty*** *for the strength, endurance, and perseverance throughout my project.*

I am deeply indebted to ***Dr. Sandeep Chhabra,*** *Professor of Medicine, my teacher and guide for his exemplary guidance, genuine enthusiasm towards my thesis, patience to hear, understand, and correct me and to help bring out the best in me. It has been a privilege and honor to work under his guidance.*

I also want to thank ***Dr.Shibba Takkar Chhabra,*** *Professor of Cardiology, and* ***Dr Rupesh Chaudhary****, my co-guides for all their support, valuable suggestions, and supervision during my thesis work.*

This thesis has been kept on track and been seen through to completion with the support and encouragement of numerous people including my teachers, family, well-wishers, friends, and colleagues.

I take this opportunity to express my wholehearted gratitude and indebtedness to my revered teachers: Head of Department of General Medicine, ***Dr. Rajesh Mahajan****; Professor of Medicine,* ***Dr. Gautam Ahluwalia****; Professor of Medicine,* ***Dr. Vandana Midha;*** *and Professor of Medicine,* ***Dr. H.P.S Dhooria*** *for their unfailing encouragement and inspiration throughout from planning to the execution of this research project.*

I am grateful to ***Dr. Jasleen Kaur Bhalla*** *for accommodating me with great patience at all times.*

I, hereby, would like to thank ***Dr. Abhishek Bansal,*** *Assistant Professor, Department of Medicine, for his words of wisdom and support at all times.*

I also express my gratitude to my seniors, colleagues, and juniors with whom I had the pleasure to work with and without whom this task would not have been possible. A special thanks to ***Dr. Rishav Tohani, Dr. Abhinav Gupta, Dr. Bikram Longia, Dr. Parul, Dr. Barinder,*** *and* ***Dr. Nirmal,*** *for being the pillars of my support system during this testing time.*

I am and will be forever grateful to my family for all their support, confidence, encouragement, and patience during this time, especially when the odds were stacked high against me.

At the end of my thesis, I would like to thank all those people who made this thesis possible and an unforgettable experience for me.

Dr. Prikshit Goel

ABBREVIATIONS

5-HT	5-Hydroxy Tryptamine
ACC	American College of Cardiology
ACEi	Angiotensin Converting Enzyme inhibitor
ACTION-HF	A Controlled Trial Investigating Outcomes of Exercise Training- Heart Failure
ADH	Anti-Diuretic Hormone
AHA	American Heart Association
ANP	Atrial Natriuretic Peptide
ANS	Autonomic Nervous System
ARB	Angiotensin-II Receptor Blocker
ARIC	Atherosclerosis Risk In Communities
ARNi	Angiotensin Receptor Neprilysin inhibitor
ASCEND-HF	Acute Study of Clinical Effectiveness of Nesiritide in Decompensated Heart Failure
ASIAN-HF	Asian Sudden Cardiac Death in Heart Failure
BDNF	Brain-Derived Neurotrophic Factor
BETRHEART	Behavioural Triggers of Heart Failure
BNP	Brain Natriuretic Peptide
CAD	Coronary Artery Disease
CHARM	Candesartan in Heart failure Assessment of Reduction in Mortality and Morbidity
CHD	Coronary Heart Disease
CHF	Chronic Heart Failure/ Congestive Heart Failure
COPD	Chronic Obstructive Pulmonary Disease
COVID-19	Corona Virus Disease of 2019
CRT	Cardiac Resynchronization Therapy
CVD	CardioVascular Disease
DA	Dopamine
DSM	Diagnostic and Statistical Manual of Mental disorders
E/A RATIO	Ratio of peak velocity of blood flow during early diastole (E wave) to peak velocity of blood flow during

	late diastole (A wave)
ECHO	Echocardiography
ECMO	Extra-Corporeal Membrane Oxygenation
ED	Erectile Dysfunction, Emergency Department
EGFR	Estimated Glomerular Filtration Rate
EPICA	Epidemiology of Heart Failure and Learning
EQ-5D	EuroQol 5 Dimension
FACIT-PAL	Functional Assessment of Chronic Illness Therapy-Palliative care
GAD	Generalised Anxiety Disorder
GDMT	Guideline-Directed Medical Therapy
HF	Heart Failure
HFmrEF	Heart Failure with mid-range Ejection Fraction
HFpEF	Heart Failure with preserved Ejection Fraction
HFrEF	Heart Failure with reduced Ejection Fraction
HIV	Human Immunodeficiency Virus
HPA	Hypothalamic-Pituitary Axis
HRQOL	Health Related Quality Of Life
ICD	International Classification of Diseases
IHD	Ischemic Heart Disease
IL-1b	Interleukin-1b
IL-8	Interleukin-8
INTER-CHF	International-Congestive Heart Failure
JITAI	Just-In-Time Adaptive Intervention
KCCQ	Kansas City Cardiomyopathy Questionnaire
LBBB	Left Bundle Branch Block
LV	Left Ventricle
LV EF	Left Ventricular Ejection Fraction
LVAD	Left Ventricular Assist Device
M.I.N.I	Mini International Neuropsychiatric Interview
MAGGIC	Meta Analysis Global Group In Chronic heart failure
MDD	Major Depressive Disorder

M-HART	Montreal-heart Attack Readjustment Trial
MI	Myocardial Infarction
MRA	Mineralocorticoid Receptor Antagonist
MRD	Medical Records Department
MSIMI	Mental Stress Induced Myocardial Infarction
N	Number
NE	Nor-Epinephrine
NO	Nitric Oxide
NYHA	New York Heart Association
OMT	Optimal Medical Therapy
PAL-HF	Palliative care in Heart Failure
PARAMOUNT	Prospective comparison of ARNi with ARB on the Management of heart failure with preserved ejection fraction
PCP-HF	Pooled Cohort equations to Prevent Heart Failure
PCS	Physical Component Summary
PD	Panic Disorder
PSS	Perceived Stress Scale
PTSD	Post-Traumatic Stress Disorder
QALYs	Quality Adjusted Life Years
QOL	Quality Of Life
RAAS	Renin Angiotensin Aldosterone System
RAASi	Renin Angiotensin Aldosterone System inhibitor
RV	Right Ventricle
SF-36	36-item Short Form health survey
SGLT-2	Sodium-Glucose Transporter-2
SMI	Severe Mental Illness
SSRIs	Selective Serotonin Reuptake inhibitors
SWB	Spiritual Well Being
TNF	Tumor Necrosis Factor
WHOQOL-BREF	World Health Organisation Quality Of Life-Brief version
YLDs	Years Of healthy Life lost due to Disability

ABSTRACT

INTRODUCTION: Congestive heart failure (CHF) is a multifactorial clinical condition marked by ineffective cardiac function, which compromises the body's blood supply. Although they frequently go untreated, psychiatric illnesses frequently coexist with CHF. The way a patient's mental health, disease severity, clinical findings, and demographics interact will affect how well they live.

AIM AND OBJECTIVES: To evaluate the prevalence of psychiatric co-morbidities and their effect on patients' quality of life who are suffering from chronic heart failure. To investigate the correlation between the severity of chronic heart failure (as assessed by the NYHA severity grading system) and the frequency of psychiatric co-morbidities in patients with chronic heart failure.

MATERIALS & METHODS: This cross-sectional study was carried out at Dayanand Medical College & Hospital in Ludhiana, a tertiary care hospital. The study comprised 200 patients with chronic heart failure (HFrEF, HFmrEF, and HFpEF), including all four NYHA severity classifications. The WHO Quality of Life Assessment-BREF scale was used to measure quality of life, and the Mini International Neuropsychiatric Interview Questionnaire was used to evaluate psychiatric co-morbidities.

RESULTS: The mean age of patients was 62.08 ±11.44 years, mostly males (63%), literate (74%), married (82%), in-patients (71.5%), in NYHA-III (41%), HFrEF (63.5%) and the age group 60-74 years (45.9%). 42.5% had psychiatric co-morbidity with MDD/RDD (19%) and GAD (12.5%) being the most common. Prevalence increased with the worsening of the severity of the CHF. The QOL was affected in all 4 domains of WHO-QOL BREF in CHF and was poorer in NYHA-III and NYHA-IV than in NYHA-I and NYHA-II severity classes of CHF and in the presence of psychiatric comorbidities.

CONCLUSIONS: The presence of psychiatric co-morbidities and its effect on QOL of CHF patients and its relationship with the severity of CHF is significant and hence needs to be understood and evaluated.

KEYWORDS: CHF, NYHA, QOL, HFrEF, HFpEF, WHO-QOL BREF, MDD/RDD, GAD.

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INTRODUCTION

DEFINITION:

Congestive heart failure (CHF) is a complicated clinical disease arising from any impairment of ventricular filling or blood ejection, either structural or functional. [1] CHF significantly reduces quality of life, increases healthcare costs, and impairs functional capacity.

ETIOLOGY:

There are several causes of CHF, with coronary artery disease (CAD) being the most frequent. We can roughly categorize the etiologies as pathologies linked to infiltration, congenital heart disease, valve disease, myocarditis, high-output failure, secondary to systemic disease, and intrinsic heart disease. [1]

Ischemic heart disease, hypertensive heart disease, rheumatic heart disease, and COPD are the four most frequent etiologies of CHF, accounting for around two-thirds of cases. [1]

EPIDEMIOLOGY:

The Registry for Exchange of Global Health Data indicates that there are currently 64.34 million instances in total of CHF all over the world. That equals 346.17 billion US dollars in healthcare spending and 9.91 million YLDs. [1]

The Framingham Heart Study found that the frequency of CHF was 8/1000 males between the ages of 50 and 59, rising to 66/1000 males between the ages of 80 and 89. After 65, the incidence of heart failure (HF) in men doubles every ten years of age; for the same age cohort, the incidence in women triples.

STAGING AND CLASSIFICATION [1]

Heart failure is classified using left ventricle ejection fraction (LV EF). [1]

HF with reduced ejection fraction (HFrEF): LVEF ≤ 40%

HF with mildly reduced ejection fraction: LVEF 41% - 49% and evidence of HF.

- HF with preserved ejection fraction (HFpEF): LVEF ≥ 50% and evidence of HF.
- HF with improved ejection fraction: LVEF greater than 40%, with previously documented Left Ventricular EF ≤ 40%

Stages of Heart Failure by ACC/AHA [1]

• Stage A: HF risk is present. There are risk factors but there are no symptoms, no evidence of a heart disease with structural defects, or indications of increased cardiac biomarkers.

• Stage B: Pre-HF: Patients with heart disease with structural abnormalities, proof of high filling pressures, or chronically elevated cardiac biomarkers exhibit none of the symptoms or indicators of heart failure.

• Stage C: individuals with heart disease with structural defects who have experienced cardiac failure in the past or present.

• Stage D: people who need frequent hospital admissions or who have intractable symptoms that interfere with daily functioning despite receiving medical therapy.

New York Heart Association Functional Classification [1]

- Class I: development of symptoms with higher than ordinary activity levels
- Class II: Symptom onset with a usual level of activity
- Class III: Symptom onset with minimal activity
  - Class IIIa: Not experiencing dyspnea while at rest
  - Class IIIb: Recent onset of dyspnea at rest
- Class IV: Symptoms at rest

Treatment / Management [1]

Reducing hospitalizations, reducing cardiac mortality, and improving symptoms and QOL are treatment objectives for chronic CHF. Pharmacologic therapy aims to manage symptoms while starting and increasing medications that lower mortality and morbidity in heart failure. The guidelines for the management of each stage of heart failure have been provided by the ACC/AHA. [1]

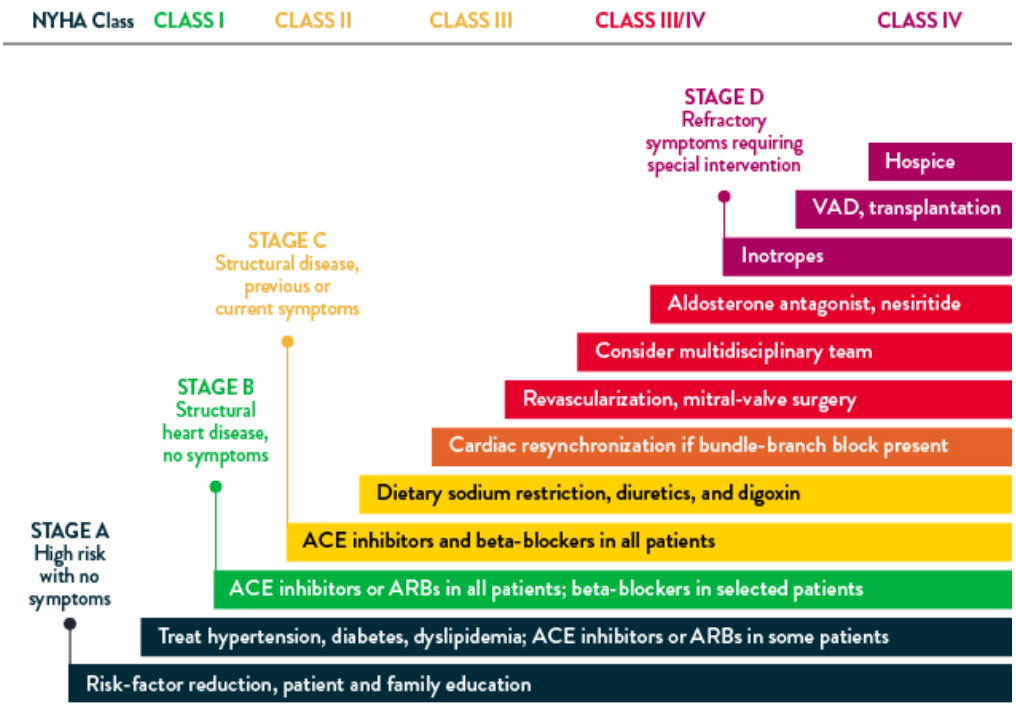

Figure A: taken from Google- caption: recognizing the stages of heart failure/Abbott [17]

CHF AND PSYCHIATRIC CO-MORBIDITIES:

In addition to causing the patient to experience the symptoms of HF, HF also causes lifestyle alterations and an increase in stress, both of which might raise the patient's chance of developing other psychological disorders. [2]

Evidence that psychological illnesses, particularly depression and anxiety disorders, are more prevalent among HF patients lends

credibility to the concept.[3] Major depression affects 20%–40% of individuals with CHF, a rate that is significantly greater than that of the general population (4%–5%). [3-6] Approximately 1 in 5 HF patients are clinically depressed.[7] According to one study, almost 30% of HF patients have depression or signs of depression. [6] According to another study, 21% of HF patients have depression. Additionally, anxiety is widespread in HF patients. [4]

[8] Anxiety disorders, including panic disorder, anxiety not otherwise specified (NOS), and generalized anxiety disorder, affecting 13% of CHF patients.

Apart from the increased comorbidity of mental health conditions in heart failure patients, diagnosing anxiety and depression in these individuals might also present diagnostic challenges. This is mainly because these mental illnesses and HF share similar symptomatologies.[2]

As HF becomes more severe, the prevalence and severity of mental illnesses increase. [2]

Moreover, there is a positive association which is observed between psychiatric disorders and higher rates of HF morbidity and death. [2]

Cardiac health is adversely affected when anxiety disorders exist.[9,10,11]

Heart conditions such as heart failure and mental health issues like depression and anxiety are related in both directions. So, it also becomes crucial to check for cardiac conditions, for instance, HF in individuals who have mental health issues, particularly in those who have HF risk factors. [2]

Compared to individuals who do not experience any psychiatric disorders, those who experience depression or anxiety following heart failure have less satisfying results.[12]

Hospitalization frequency, duration of stay, death rate, and QoL at follow-up are used to quantify the result. It lowers QoL besides the readmission rate and hospital stay duration.[3,13, 14]

Quality of Life (QOL) refers to how patients feel about their health, abilities, and condition. When a patient's emotional condition deteriorates, this perception shifts in the presence of a mental illness. [2] The prognosis of HF patients is enhanced by the identification and management of psychological illnesses.[13]

CHF AND QOL

According to the WHO, QoL is a person's assessment of where they are in life concerning their objectives, standards, expectations, and worries, as well as the cultures and value systems in which they live. It is a wide-ranging idea that is intricately influenced by an individual's bodily and mental well-being, beliefs, social interactions, and relationship to prominent environmental elements. [15]

According to this definition, quality of life (QoL) is a person's subjective assessment of their life, taking into account both the overall and multidimensional effects of their conditions and diseases as well as their symptoms. [15] Due to the unpredictable nature of the condition, frequent hospital stays, elevated levels of anxiety and depression, and physical limitations, heart failure patients experience social isolation and a reduction in the QoL.

Depression may occur in HF patients who are unable to manage their poor physical, psychological, and social functioning.

Furthermore, the physical and psychological toll that HF has on patients is exacerbated by environmental factors such as social and familial environments.

Changes in one's degree of physical and mental health, reliance, and social connections can all have an impact on one's spiritual well-being (SWB).

Patients with HF are more prone to require assistance from others due to limitations in their physical activities, higher symptom burden (e.g., fatigue, edema, shortness of breath), and sleep disturbances. These factors, together with accompanying changes in social life, might worsen health-related quality of life. Every facet of life is impacted by chronic illness. [16]

A person's quality of life can be reduced by up to 40% due to physical problems, medical side effects, disease, or financial hardship. [16]

Patients with depression and chronic heart failure have a lower quality of life. [16] Thus, depression is common among those who have long-term heart failure.
Quality of life is more influenced by psychosocial factors than by biological variables. Among other psychosocial aspects, social support is crucial because it enhances compliance and self-care.

For many CHF patients, the illness leads to social isolation, changes in work-life balance, and strained family dynamics. Exercise improves the quality of life, which is crucial for CHF patients as well. [16]

To improve the QoL of CHF patients, cardio rehabilitation is a very successful strategy. It can alleviate symptoms, improve exercise tolerance, minimize the rate at which CHF progresses, and eventually lower death rates. Depression considerably worsens the quality of life for CHF patients. For treating depression in patients with congestive heart failure, cognitive behavioral therapy is primarily utilized. [16]

AIMS AND OBJECTIVES

1. To study the prevalence of psychiatric co-morbidities and the impact on the quality of life in patients with CHF.
2. To evaluate the relationship between the prevalence of psychiatric co-morbidities and the severity of Chronic heart failure (as determined by 2D-ECHO, NYHA severity grading).

Secondary objectives:

Relationship between prevalence of specific co-existing psychiatric morbidities and NYHA severity of CHF

Relationship between QoL and NYHA severity of CHF

Relationship between prevalence of psychiatric comorbidities and type of CHF and the relationship between QoL and type of CHF.

REVIEW OF LITERATURE

DEFINITION:

Chronic heart failure is a multifaceted clinical condition that arises from the deterioration of ventricular filling or blood ejection, leading to higher healthcare expenses, decreased functional ability, and a significant impact on QoL. [1]

ETIOLOGY:

CHF has numerous causes, with the most prevalent being coronary artery disease (CAD), which leads to ischemic heart disease.

The causes can be grouped into intrinsic heart disease and pathologies stemming from infiltration, congenital issues, valve problems, myocarditis, high-output failure, and conditions linked to systemic disease.[2][4]

The leading causes of about two-thirds of cases of CHF are ischemic heart disease, COPD, heart disease secondary to hypertension, and rheumatic heart disease.[1]

Ischemic heart disease

Ischemia causes a decrease in the ejection fraction by reducing blood flow to the heart muscles. The occurrence of this condition is on the rise in developing nations as they embrace a more Westernized diet and way of life. Additionally, the improved medical care in these countries is reducing the prevalence of infectious diseases, including those related to myocarditis.[1]

Valvular heart disease

Rheumatic heart disease is the leading reason for valvular heart disease in children and young adults globally.

Age-related degeneration is the primary cause of valvular disease overall, and the aortic valve is the one that is most commonly involved.

Mitral valve rheumatic heart disease or mitral valve prolapse are more common in women, while aortic valve diseases such as regurgitation or stenosis are more prevalent in men.[1]

Hypertension

Hypertension can also, by itself, induce CHF. Moreover, research indicates that treating hypertension aggressively can reduce the occurrence of CHF.[1]

Cardiomyopathy

Hypertrophic, dilated, restricted, arrhythmogenic right ventricular, and left ventricular noncompaction cardiomyopathies are the most prevalent forms.[1]

Inflammatory cardiomyopathy

Myocarditis, ventricular remodeling, and cardiac dysfunction are its defining characteristics.

The most frequent reason is infection with a virus. Additional causes include immune-mediated illnesses; toxic chemicals or medications; and infections caused by bacteria, fungi, or protozoa.

Viruses such as HIV, hepatitis C virus, influenzas A and B, and coronaviruses (particularly COVID-19) can also trigger autoimmune myocarditis.

These disorders usually have a bad prognosis when linked to CHF.[1]

Infiltrative cardiomyopathies

They may result in a restrictive cardiomyopathy pattern, which is characterized by diastolic dysfunction and restricted filling dynamics of the Left and Right Ventricles, but with normal ventricular systolic function.

A high E/A ratio that indicates more early filling and delayed late filling is frequently linked to this.[6,8]

Examples of invasive cardiomyopathies include sarcoidosis, cardiac hemochromatosis, and cardiac amyloidosis.

Takotsubo or stress-induced cardiomyopathy (colloquially broken-heart syndrome) is an underrecognized cause of CHF. It causes transient left ventricular wall abnormalities that are not localized to a specific vascular territory.[1]

Peripartum cardiomyopathy

It greatly increases the risk of maternal death. Pregnancy causes an increase in heart rate and stroke volume, which causes a 20% to 30% increase in cardiac output.

It manifests as CHF in late pregnancy, postpartum, or even months after birth as a result of LV systolic dysfunction. [1]

Obesity

The "CHARM study" revealed that it is one of the main causes of CHF in individuals under 40 years old.

Individuals who are obese are at a greater risk of developing HFpEF, potentially due to cytokines such as IL-1b, IL-8, and TNFα produced by adipose tissue.

Adipose tissue also breaks down natriuretic peptides.[1]

Tachycardia and arrhythmia

They can cause a state of low-output CHF. Typically, all cardiac chambers dilate, and the thickness of both ventricular walls is either preserved or thinned.

Additionally, electrophysiologic changes occur, which involve a prolonged duration and decreased amplitude of action potentials in the myocytes. These changes are often reversible with rate control.[1]

Thyrotoxicosis

This is an uncommon reason for heart failure even when a hyperdynamic circulatory state is initiated by activating the renin-angiotensin-aldosterone axis, resulting in sodium and water retention and an elevation in erythropoietin levels.

Persistent rapid heartbeat, with or without atrial fibrillation, can also lead to congestive heart failure.[1]

High-output cardiac failure

Thiamine deficiency can lead to this condition, which is uncommon and is mainly seen in elderly individuals, homeless people, or those with alcohol use disorder.

Obesity, liver disease, and arteriovenous shunts are other frequent contributors to high-output cardiac failure.

These conditions often manifest with preserved EF, pulmonary congestion heightened filling pressures, and increased levels of natriuretic peptides.[1]

EPIDEMIOLOGY:

In 2017, 1.2 million hospitalizations occurred due to CHF, with a higher percentage of patients having HFpEF compared to HFrEF. [1]

As per the Registry for the Exchange of Global Health Data, there are presently 64.34 million cases of CHF throughout the world, resulting in 9.91 million years of YLDs and 346.17 billion US dollars in healthcare spending.[1]

Age plays a significant role in the occurrence of HF. Regardless of the underlying cause or the criteria used to categorize HF patients, the frequency of HF rises sharply with advancing age.

According to the Framingham Heart Study, the prevalence of CHF was found to be 8 for every 1000 men in the age group of 50-59 years, and it increased to 66 for every 1000 men in the 80- 89 years age group.[1] The frequency of CHF in men is twice as high with every 10-year increase in age after 65, while women in the same age group experience three times the incidence.

Throughout the world, men have an elevated prevalence of heart disease and CHF compared to women.[1]

As one age, leads a sedentary lifestyle, and possesses metabolic risk factors, the incidence of the condition increases significantly.

Pathophysiology

The persistent stimulation of the sympathetic nervous system leads to decreased sensitivity of beta-receptors and reduced adrenaline reserves. This leads to alterations in the regeneration of myocytes, enlargement of the myocardium, and increased contractility of the heart.[1] The heightened sympathetic activity also leads to the initiation

of the renin-angiotensin-aldosterone system (RAAS), constriction of the blood vessels throughout the body, and retention of sodium.[1]

A reduction in the amount of blood pumped by the heart and an increase in the activity of the sympathetic nervous system triggers the RAAS, resulting in enhanced retention of salt and water, as well as heightened narrowing of blood vessels, which further promotes the ineffective mechanisms in the heart and contributes to the worsening of HF.

Angiotensin II promotes the enlargement of the heart muscle cells and the formation of excess fibrous tissue between the cells, which contributes to the restructuring of the heart muscle.[1]

Reduced blood flow to the kidneys leads to the release of antidiuretic hormone (ADH), which further enhances the retention of sodium and water.[1]

Decompensated CHF is defined by the narrowing of blood vessels in the limbs and the increased amount of blood delivered to the overwhelmed heart. Even though the hormones BNP and ANP are released, they are ineffective in counteracting the excessive retention of sodium and water.[1]

Neprilysin breaks down various hormones, including BNP, ANP, and bradykinin; it is a target for a variety of new treatments.

In HFpEF, there is a reduction in the relaxation of the cardiac muscle and an elevation in the stiffness of the ventricle due to an increase in pressure after the blood leaves the heart. This perpetuates the same ineffective hemodynamic adjustments and results in worsening HF. Patients with HFpEF often tend to be elderly, female, and have high blood pressure.

DIAGNOSIS:[1]

The Framingham Diagnostic Criteria for Heart Failure are frequently used and necessitate the existence of two major criteria or 1 major and 2 minor criteria to establish the diagnosis.

The Framingham Diagnostic criteria are as follows:

Major Criteria

- Acute pulmonary edema
- Cardiomegaly
- Hepatojugular reflex
- Neck vein distention
- Paroxysmal nocturnal dyspnea or orthopnea
- Pulmonary rales
- S3 Gallop

Minor Criteria

- Ankle edema
- Dyspnea on exertion
- Hepatomegaly
- Nocturnal cough
- Pleural effusion
- Tachycardia (heart rate greater than 120 bpm)

STAGING AND CLASSIFICATION [1]

Left ventricle ejection fraction (LV EF) is used to classify HF.

- HF with reduced ejection fraction (HFrEF): LV EF ≤ 40%
- HF with mildly reduced ejection fraction: LV EF 41% - 49% and evidence of HF (elevated cardiac biomarkers or elevated filling pressures)
- HF with preserved ejection fraction (HFpEF): LV EF ≥ 50% and evidence of HF (elevated cardiac biomarkers or elevated filling pressures)
- HF with improved ejection fraction: Left Ventricular EF >40%, with previously documented ejection fraction of less than 40%

Patients with HFpEF make up 44% and 72% of CHF cases.

ACC/AHA Heart Failure Stages

- Stage A: The patient is at risk for Heart Failure. No symptoms, abnormalities of cardiac structure, or increased cardiac biomarkers, but in the presence of risk factors.

Hypertension, diabetes, metabolic syndrome, cardiotoxic medications, or having a genetic variant for cardiomyopathy are among the risk factors.

- Stage B: Pre-HF. Patients don't have any signs or symptoms of HF but have abnormal structure of the heart, increased filling pressures, or continuously elevated cardiac biomarkers in the absence of other reasons for elevated markers, like chronic kidney disease or myocarditis.
- Stage C: Patients with structural heart disease with existing or previous history of the presence of symptoms of Heart Failure.
- Stage D: Individuals who, despite focused guideline-directed medical therapy, continue to experience intractable symptoms that disrupt daily life or require repeated hospitalization.

New York Heart Association Functional Classification

The patients can be categorized using the New York Heart Association's (NYHA) functional classification in the following ways based on their symptoms:[3]

- Class I: onset of symptoms with more than usual level of activity
- Class II: Symptom onset with usual level of activity
- Class III: Symptom onset with minimal activity
    - Class IIIa: the patient does not have dyspnea while at rest
    - Class IIIb: Recent onset of dyspnea at rest
- Class IV: Symptoms at rest

Acute versus chronic heart failure

Heart failure is usually a long-term condition, known as chronic heart failure (CHF), where episodes of worsening symptoms and signs can arise, leading to potential hospitalization or more frequent medical appointments (CHF decompensation). On the other hand, heart failure can manifest suddenly, with the onset of severe symptoms and signs within 24 hours. Acute heart failure can clinically appear in various forms.

- acute pulmonary edema secondary to cardiac dysfunction
- cardiogenic shock, usually in the setting of an acute coronary syndrome, characterized by hypotension, oliguria, and peripheral vasoconstriction
- acute worsening (decompensation) of CHF.

Treatment / Management [1]

Treatment for persistent CHF aims to enhance symptoms and quality of life, reduce hospitalizations, and decrease cardiac mortality. The objective of drug treatment is to manage symptoms and to start and increase the use of medications that lower mortality and morbidity in HF.

The management for the different stages of HF is provided by the ACC/AHA.

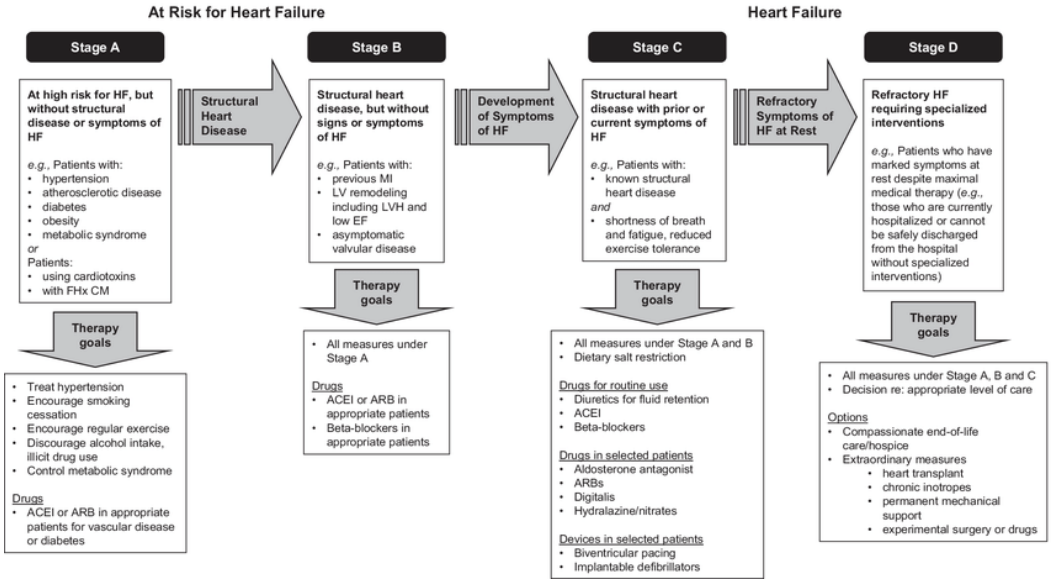
At Risk for Heart Failure
Heart Failure
Stage A
Stage B
Stage C
Stage D
At high risk for HF, but without structural disease or symptoms of HF
e.g., Patients with:
• hypertension
• atherosclerotic disease
• diabetes
• obesity
• metabolic syndrome
or
Patients:
• using cardiotoxins
• with FHx CM
Structural Heart Disease
Structural heart disease, but without signs or symptoms of HF
e.g., Patients with:
• previous MI
• LV remodeling including LVH and low EF
• asymptomatic valvular disease
Development of Symptoms of HF
Structural heart disease with prior or current symptoms of HF
e.g., Patients with:
• known structural heart disease
and
• shortness of breath and fatigue, reduced exercise tolerance
Refractory Symptoms of HF at Rest
Refractory HF requiring specialized interventions
e.g., Patients who have marked symptoms at rest despite maximal medical therapy (e.g., those who are currently hospitalized or cannot be safely discharged from the hospital without specialized interventions)
Therapy goals
• Treat hypertension
• Encourage smoking cessation
• Encourage regular exercise
• Discourage alcohol intake, illicit drug use
• Control metabolic syndrome
Drugs
• ACEI or ARB in appropriate patients for vascular disease or diabetes
Therapy goals
• All measures under Stage A
Drugs
• ACEI or ARB in appropriate patients
• Beta-blockers in appropriate patients
Therapy goals
• All measures under Stage A and B
• Dietary salt restriction
Drugs for routine use
• Diuretics for fluid retention
• ACEI
• Beta-blockers
Drugs in selected patients
• Aldosterone antagonist
• ARBs
• Digitalis
• Hydralazine/nitrates
Devices in selected patients
• Biventricular pacing
• Implantable defibrillators
Therapy goals
• All measures under Stage A, B and C
• Decision re: appropriate level of care
Options
• Compassionate end-of-life care/hospice
• Extraordinary measures
• heart transplant
• chronic inotropes
• permanent mechanical support
• experimental surgery or drugs

Figure B: The ACC/AHA recommendations specify the evaluation and management of HF, including the recommended therapy and course of action based on the HF stage.[35] ACEI=angiotensin-converting enzyme inhibitors; ARB=angiotensin receptor blockers; EF=ejection fraction; FHx CM=family history of cardiomyopathy; HF=heart failure; LV=left ventricular; LVH=left ventricular hypertrophy; MI=myocardial infarction

Epidemiology of cardiovascular disease (CVD) and heart failure (HF)

Heart failure (HF) is a clinical disorder marked by an impairment of the ability of the heart to pump or fill with blood. A raised left ventricular filling pressure is indicative of HF. Heart failure (HF) has three subtypes: heart failure with reduced ejection fraction (HFrEF), heart failure with maintained ejection fraction (HFpEF), and heart failure with mid-range ejection fraction (HFmrEF).[18]

As the primary cause of death and morbidity, CVD was estimated to account for 17.8 million deaths globally in 2017, or almost one-third of all deaths. In 2016, nearly 48% of adult U.S. deaths were attributable to cardiovascular disease (CVD), according to the most recent edition of the yearly statistics reported by the AHA. [18]

Incidence and prevalence of HF

Approximately 5% of CVD patients have HF. Almost 23 million people all over the world are affected by HF, including 6 million Americans and over 15 million Europeans.[18] In developed, high-income nations, the prevalence of HF ranges from 1% to 2% of the population; in those over 70, the rate rises to 10%.

It is estimated that the likelihood of having heart failure (HF) in the remaining years of a person's life at age 55 is 28% for women and 33% for men. Numerous risk factors, including age, hypertension, chronic heart disease, obesity, hyperlipidemia, and diabetes, have an impact on the prevalence and incidence of heart failure.

Over the previous few decades, the predominance has grown. It is anticipated that there will be a further increase due to the growing number of elderly people and advancements in diagnosis and treatment.[18]

With 500,000 to 600,000 newly diagnosed cases annually, the incidence has remained mostly steady over time, suggesting that the control of risk factors through targeted primary preventive efforts has been effective in postponing the onset of heart failure.[18]

According to area, sex, diagnostic location, and socioeconomic position, there are notable variations in the long-term outcomes of heart failure patients, according to a recent global population-based study. The authors concluded that HF patients' long-term outcomes could be considerably improved by customized care regimens.[18]

Mortality

Without a doubt, HF dramatically reduces the likelihood of survival overall. During a median follow-up of 2.5 years, a comprehensive meta-analysis predicted a 40.2% mortality rate among HF patients. Data from other population-based studies, such as the Framingham Heart Study and the Olmsted Study, which showed rates of 50–59% in men and 30–46% in women, supported the high death rate of HF in the 1990s.[18]

Regional variation of mortality

The total 1-year mortality rate is 16.5–7% in China, 9% in South America and the Middle East, and 34% in African nations, according to the recently released worldwide cohort research INTER-CHF. Comparable research conducted on Asian nations verified the geographical variations in mortality linked to national economic disparities.

The greatest crude all-cause 1-year death rate (13.6%) is seen in Southeast Asia, in the subsample of patients with HFrEF, compared to 8.9% in Northeast Asia and 8.3% in South Asia. Despite having relatively young populations, Indonesia (21.4%) and the Philippines (14.3%) had the highest per-person mortality rates. Conversely, Japan, whose population is comparatively older, has the lowest 1-year mortality rate, at 4.4%.

Humanistic burden of HF [18]

The effects of a disease on everyday activities, patient HRQoL, caregiver health, and caregiver quality of life are all summed up under the term "humanistic burden." Two-thirds of the normal population chose enhanced HRQoL above survival duration, according to the

SHAPE study. Prior US research on heart failure patients supported this preference and emphasized the significance of HRQoL as an outcome measure.

HRQoL

HRQoL encompasses both long-term physical and mental health. Disease-specific and general variables, which are felt and typically reported by patients, are used to implement HRQoL. These measures are then assessed through the use of validated questionnaires. When compared to people without HF and those with the majority of other chronic diseases, patients with Heart Failure are associated with a significant decline in HRQoL.

More severe NYHA phases have been linked to a worse HRQoL, according to several studies. One study that used the SF-26 showed how the ejection fraction affected general HRQoL. A different investigation using the KCCQ, a disease-specific measure, revealed no discernible variation between HF patients with an EF of less than 40 or more than 50.

Moreover, there is ample evidence to support that decreased HRQoL in HF patients is related to comorbidities, poor mental health, and the necessity for hospitalization. Treatment strategies that help HF patients achieve an improved clinical state also benefit HRQoL.

HRQoL studies are essentially a part of every new drug's clinical development phase as standard practice for pharmaceutical corporations. For instance, it has been demonstrated that there is a favorable correlation between HRQoL and the use of beta-blockers, angiotensin-converting enzyme inhibitors, and ARBs in HF patients.

The HRQoL of advanced HF patients benefits from the use of left ventricular assist devices. Three months after implantation, improvements in HRQoL are observed, and they last the whole course of support.

Hospitalization rate [18]

It has been demonstrated that there's a correlation between the hospitalization rates of HF patients and the long-term treatment

expenses, mortality, HRQoL, and disease severity. Up to 25% of HF patients require hospitalization for reasons specific to their condition, while up to 60% of patients require hospitalization for other reasons.

HEART FAILURE AND MENTAL STRESS

Heart failure is a serious stressor because it is an ongoing life-threatening condition, and there is growing evidence that psychological stress hurts the progression of heart failure.[19] Patients who survive an acute HF episode go through periods of symptom stability followed by episodes of decompensation, making these episodes of exacerbation more frequent and recovery to prior health status less likely.

Stress and HF Progression [19]

Poor results in HF are linked to psychological stress. PTSD was linked to increased all-cause death beginning two years after the initial HF diagnosis, according to nationwide research of 111,970 US veteran men with HF that examined the association between PTSD and HF outcomes.

Furthermore, in line with naturalistic observations from several studies carried out in northeastern Japan following the devastating earthquake and tsunami in 2011, HF admissions rose in the months that followed the calamity and continued to rise in the most affected areas four years later [19] as a result of ongoing stressful post-disaster sequelae. At baseline, a cross-sectional negative relationship was discovered between exposure to stressful life events in the previous year and present HF-related quality of life. The largest effect was noted for patients who reported moderate to high levels of stress exposure.

In a study, 81 hospitalized heart failure patients who completed the screening version of the Perceived Stress Scale (PSS) reported feeling more stressed than healthy people. Greater levels of stress have been associated with a significantly greater risk for cardiac-related hospitalizations and mortality, according to the Biobehavioral Triggers of HF (BETRHEART) Study. These findings may have a deleterious impact on HF status.

Potential Pathophysiological Mechanisms [19]

A physiological reaction that is adapted to psychological stress is marked by a decrease in cardiac vagal tone, the release of catecholamines and cortisol, an elevated heart rate, cardiac output, and blood pressure, the release of inflammatory cytokines, and modifications to hemostasis and thrombosis. Since cortisol functions as a receptor agonist for mineralocorticoids, it mimics the actions of aldosterone in the myocardium, psychological stress may impair the lowering of RAAS by beta-blockers, angiotensin, and aldosterone blockers.

In all, a novel stress-induced reversible myocardial perfusion deficit—mental stress-induced myocardial ischemia (MSIMI)—was seen in two-thirds of the patients. Acute stress-induced deterioration of LV filling pressure (E/e' ratio) was seen in two-thirds of patients on cardiac ECHO in addition to a direct, temporary influence on ventricular diastole in HF. Stress's short- and long-term effects on heart failure may also be exacerbated by psychiatric comorbidities such as depression, anxiety, and PTSD. Furthermore, there may be reciprocity in the links seen between the course of HF and experienced stress.

Potential Behavioral Pathways

Individuals who experience overwhelming stress, whether related to their heart failure or other life stressors, may exhibit reduced adherence to their treatment plan, exhibit less symptom monitoring, and postpone seeking medical attention, all of which can accelerate the course of their illness.[19]

Heart Failure as a Stressor

Due to the unpredictable nature of symptom exacerbations, frequent hospitalizations, complicated prescription regimens that must be learned, and related lifestyle adaptations, HF is a distinct chronic stressor in and of itself. According to a study in 2014 on 149 HF patients, the fiscal burden is more challenging for these patients, with

estimated yearly out-of-pocket healthcare costs ranging from $3913 to $5829.[19]

The heart failure symptomatology depletes a patient's energy reserves, making it harder for them to fulfill their everyday obligations and ultimately leading to a lower quality of life. "Post-hospitalization syndrome" may have a role in more than 60% of 30-day readmissions following heart failure that are caused by causes other than heart failure.

Social Determinants of Health and Stress

HF patients who have smoked in the past, those with lower incomes, those who are obese, and those in worse NYHA classes may be unduly and severely impacted by psychological stress. Frequent exposure to these stressors may make HF's clinical course more difficult to manage. [19]

Stress Management Interventions

In heart failure (HF), more focus has been placed on addressing depression, another psychological factor linked to worse outcomes and an increased burden of disease. New delivery methods, such as mobile technology and just-in-time adaptive interventions (JITAI), show promise in providing individualized stress management interventions to HF patients.[19]

IMPACT OF PSYCHIATRIC DISORDERS ON HEART

It has been determined that depression, anxiety disorders, schizophrenia, and bipolar disorder are risk factors for the beginning, development, morbidity, and mortality of cardiovascular disease. [20]

Depression

Heart failure, angina, myocardial infarction (MI), coronary heart disease, and cardiac mortality have all been linked to depression as an independent risk factor. 15% to 20% of individuals with newly diagnosed CVD are affected. Compared to non-depressed controls,

clinically depressed people have a 60–80% increased risk of developing CVD. [20]

Bipolar disorder [20]

There is a connection between cardiac illness and bipolar disorder, a mood condition marked by manic and depressive episodes. This condition affects around 1% of the general population, and people with heart disease are far more likely to experience it. When compared to those in the general community, those with bipolar illness have a mortality rate that is younger and can be up to twice as high from cardiovascular causes.

Anxiety

There is a correlation between generalized anxiety disorder and a higher incidence of cardiovascular disease as well as increased mortality from CVD. After a serious cardiac incident, post-traumatic stress disorder may develop, and it is linked to a greater risk of cardiovascular disease. Anxiety similar to agoraphobia, or phobic anxiety, is associated with an increased risk of cardiac mortality, especially sudden cardiac death. With a frequency of 10–50%, panic disorder is linked to cardiovascular disease (CVD). Panic disorder affects around 25% of patients who report to the emergency room with chest discomfort. Symptoms of a panic attack, such as diaphoresis, nausea, shortness of breath, and chest tightness, can mirror those of a cardiac event. [20]

Schizophrenia [20]

Patients with Schizophrenia have a two-fold greater relative risk of death due to cardiac ailments and a much higher CVD risk than the general population. Patients who are not receiving antipsychotic treatment are at risk for CVD.

Consequently, an elevated risk of heart disease and mortality is linked to depression, bipolar disorder, anxiety, and schizophrenia. Remission of symptoms associated with psychiatric disorders may enhance QoL,

and medical and psychological care may enhance the prognosis for heart problems. Moreover, there has been a correlation shown between lower death rates in cardiac patients and some drugs, including SSRIs and antipsychotics. [20]

Heart Failure Among Patients With and Without Severe Mental Illness and the Association with Long-Term Outcomes

Patients with severe mental illness (SMI), such as schizophrenia, bipolar disorder, and severe depression, have a lower life expectancy of about 20 years due to a higher burden of cardiovascular disease, and SMI patients, as compared to the general population, have an elevated risk of cardiovascular disease by over 50% and an elevated risk of cardiovascular death by around 85%.[21]

According to data, people with SMI may have an elevated possibility of modified left ventricular (LV) anatomy and physiology because cardiovascular risk factors and diseases, such as hypertension, diabetes, obesity, smoking, and myocardial infarction, might manifest earlier in life. Patients with comorbid SMI with clinical HF were found to be younger, male, and to have a worse long-term prognosis for HF when compared to males without SMI, according to this extensive analysis of HF patients with and without SMI.[21]

Compared to women with SMI and the general population, males with SMI were shown to have a higher risk of decreased LVEF in this research. In contrast, there was a greater incidence of cardiovascular risk factors for HFpEF in individuals with SMI. Moreover, males with SMI had a worse long-term prognosis when they had HFmEF and HFrEF. [21]

Thus, screening for and treating SMI is advised as per the international recommendations. [21]

DEPRESSION

Depression is a disorder of mood associated with an intractable feeling of sadness and loss of interest.[22]

As per DSM-5, depression can be classified as :

1. Disorder of disruptive mood dysregulation
2. Major depressive disorder
3. Persistent depressive disorder (dysthymia)
4. Premenstrual dysphoric disorder
5. Depressive disorder secondary to some other medical condition

   All depressive illnesses have symptoms such as feelings of melancholy, emptiness, or irritability, along with physical and cognitive abnormalities that severely impair the individual's ability to function. [22]

Etiology

Major depressive illness has a complex etiology, involving both hereditary and environmental variables. Compared to early-onset depression, late-onset depression is less influenced by genetic factors.

Higher rates of depression have been linked to neurodegenerative illnesses (particularly Alzheimer's and Parkinson's disease), stroke, multiple sclerosis, seizure disorders, cancer, macular degeneration, and chronic pain.

Difficulties and incidents in life serve as catalysts for the onset of depression. Stressors that can cause depression include traumatic occurrences like the loss of a loved one, lack of social support or a decline in it, the responsibility of caring for someone else, money issues, interpersonal issues, and disagreements. [22]

Epidemiology

Compared to those 60 years of age or older, the frequency is three times greater in those between the ages of 18 and 29. Beginning in early adolescence, female rates are 1.5–3 times greater than male rates. [22]

Pathophysiology

Preclinical and clinical studies point to a disruption in serotonin (5-HT) activity in the central nervous system; norepinephrine (NE), dopamine (DA), glutamate, and BDNF are among the other neurotransmitters linked to this problem. Furthermore, studies on seasonal affective disorder indicate that exposure to sunshine and changes in circadian rhythm may be triggered. [22]

History and Physical

These are the nine symptoms specified in the DSM-5; to diagnose a patient, five of these symptoms must be present (a depressed mood or an absence of interest or pleasure should be one of the symptoms). [22]

1. Sleep disturbance
2. Interest/pleasure reduction
3. Feeling of guilt or thoughts of worthlessness
4. Energy changes/fatigue
5. Concentration/attention impairment
6. Appetite/weight changes
7. Psychomotor disturbances
8. Suicidal thoughts
9. Depressed mood

Suicidal risk should be assessed in all patients with depression. A prompt response to any risk of suicide should be provided; this may need hospitalization or regular, close observation. [22]

DEPRESSION AND CHF

Depression and CHF relationship: an intriguing hypothesis

CHF and depression can have a deleterious effect on one another. There may be several pathophysiological levels at which these two diseases interact. Through similar pathways involving the onset of a pro-inflammatory and hypercoagulability state, depression and CHF mutually affect one another. This can worsen depression through ischemic brain lesions and the progression of CVDs associated with CHF. As per the Polyvagal theory, depression is exacerbated by both

hypercortisolism and an imbalance in the autonomic nervous system (ANS) that results in neurohormonal dysfunction. [23]

Clinical findings

SIG-E-CAPS [Dysfunctional or reduced sleep; anhedonia-related interest deficit; guilt (worthlessness, despair, remorse); energy deficit; concentration deficit; increased or reduced appetite; agitation or psychomotor impairment; and suicidality are the primary signs and symptoms of severe depression. In addition to frequent hospital stays, low functional status, and recurring symptoms of CHF such as dyspnea, exhaustion, edema, and sleep disruption, depression can also arise or increase as a result of these factors. [23]

Diagnosis

Among CHF patients, the average prevalence rate of clinically severe depression was found to be 21.5% based on a meta-analysis of 27 studies. The percentage varied according to the NYHA class, with class I accounting for 11% and class IV for 42%. [23]

DEPRESSION IN PATIENTS WITH AND WITHOUT CHF

Comorbid depression complicates chronic heart failure: depressive disorders are estimated to affect 11–25% of CHF outpatients and 35–70% of CHF inpatients (O'Connor and Joynt, 2004; Rutledge et al., 2006). According to Rumsfeld et al. (2003) and Jünger et al. (2005), depression is a strong indicator of increased mortality as well as a short-term deterioration of heart failure symptoms. Some risk factors for depression in patients with congestive heart failure (CHF) include higher NYHA functional class (Rutledge et al., 2006; Holzapfel et al., 2007), younger age (Freedland et al., 2003), or lower quality of life (Gottlieb et al., 2004).[24]

According to some research, older people, women, patients with more severe symptoms, and those with a history of CVD are more likely to experience depression in the general population as well as in those with HF. Two large meta-analyses estimate that the overall prevalence

of depression in heart failure (HF) is between 20% and 30%. Patients with heart failure who have a preserved or reduced ejection fraction experience an incidence similar to this one.[25]

Association between Depression and Survival in Patients with CHF

According to the findings, people with heart failure who exhibit clinically significant depressive symptoms may be at a 40% increased risk of dying at any point throughout a 12-year period compared to those without such symptoms. In this case, age was most closely linked to death.[26]

In previously healthy people, recent prospective observational research found that depression was prospectively related to an 18% greater risk of developing heart failure (HF) during the next seven years (median). A 21% higher chance of developing heart failure (HF) during the following 5.8 years was associated with serious depression in another study involving over 80,000 veterans who did not have heart disease.[27]

DEFINITION OF ANXIETY

Generalized anxiety disorder

A persistent sense of dread or worry that interferes with day-to-day functioning is typically associated with generalized anxiety disorder (GAD). Anxiety is a common occurrence for people with GAD lasting months or even years.

GAD symptoms include the following: headaches, stomachaches, aches, or unexplained pains; feeling restless, wound up, or on edge; being easily fatigued; having trouble concentrating; being irritable; having trouble controlling feelings of worry; and experiencing sleep issues, such as trouble falling or staying asleep.

Panic disorder

Panic episodes are frequent and unplanned for someone with panic disorder. Even in the absence of an obvious threat or cause, panic attacks are abrupt bursts of extreme dread, discomfort, or a sensation of losing control.

A person may experience the following symptoms during a panic attack: chest discomfort; pounding or racing heart; sweating; trembling or tingling; feelings of impending doom; and feelings of being out of control.

Social anxiety disorder

A strong, ongoing worry of being seen and evaluated by others is known as social anxiety disorder. The following symptoms of social anxiety disorder include flushing, perspiration, or shaking; pounding or racing heart; stomach aches; rigid posture or speaking in an excessively soft voice; difficulty making eye contact or being around strangers; feelings of self-consciousness or fear that others will judge them negatively.

Phobia-related disorders

An extreme aversion to or dread of particular things or circumstances is known as a phobia. Phobias and diseases associated with phobias come in several forms:

Individuals with specific phobias, often known as simple phobias, experience extreme anxiety or fear in response to particular kinds of things or circumstances. Specific phobias include fear of flying, heights, certain creatures (such as spiders, dogs, or snakes), getting an injection, or blood.

Agoraphobia: Those who suffer from agoraphobia have extreme fear in two or more of the following scenarios: Using public transportation, residing in public areas, In confined areas, Being alone outside of the house, in a crowd, or line.

Separation anxiety disorder: People with separation anxiety disorder fear being away from the people they are close to.

Some physical health disorders, such as thyroid issues or cardiac arrhythmias; caffeine or other substances/medications, etc., can cause or exacerbate anxiety feelings.

CHF AND ANXIETY

Additionally, anxiety is believed to be a common symptom of congestive heart failure (CHF), which is linked to worse self-management practices and the advancement of the disease.8. Anxiety can make CHF symptoms worse, increase hospital stays, and increase the cost of care. [28]

There exists a reciprocal association between anxiety and CHF.[28] The hypothalamic-pituitary-adrenal (HPA-axis) and anxiety are related. The HPA axis causes vasoconstriction, an increase in stroke volume through a positive feedback loop, increased inflammatory activity, aberrant platelet reactivity, and cardiac autonomic activity, all of which worsen cardiovascular outcomes.[28]

Anxiety may have affected up to 63% of the HF patients in the study [28], with severe anxiety affecting about 40% of HF patients. [30, 31] Anxiety was linked to a greater risk of adverse cardiac events and cardiac death in the next 6–10 years in a study of patients with recent acute myocardial infarction and reduced left ventricular function.[29]

Anxiety and IHD are thought to be related by stress-induced increases in catecholamine release and sympathetic nervous system activity. Ventricular premature beats have been demonstrated in particular electrophysiological investigations to rise in response to specific psychological stressors and fall in response to a decrease in sympathetic neuronal inputs. [30]

However, according to the Montreal Heart Attack Readjustment Trial (M-HART) [30], men who experience anxiety may greatly improve their long-term survival by changing the way they cope.

Wu et al conducted a study showing negative associations between anxiety and treatment adherence. [31]

Patients with heart failure may experience anxiety due to a variety of factors, such as their debilitating and progressive physical symptoms, poor long-term prognosis, complicated medication, dietary, and activity treatment regimens, comorbidities, recurrent hospitalizations, feelings of hopelessness and loss of control, inability to use regular coping

mechanisms, social isolation, frustrations with the complex healthcare system, worries about money, and fear of dying. [32]

ALCOHOL AND CHF

Alcohol consumption and mortality in the elderly

A meta-analysis of 34 prospective studies revealed a J-shaped connection between alcohol intake and overall mortality, meaning that high alcohol consumption is linked to greater mortality, and reduced alcohol consumption is strongly associated with lower overall mortality. When alcohol intake is modest, the dose-response curves for both sexes are similar; however, as intake increases, the curves diverge, with a rise in mortality in women at lower doses. Subjects who drink heavily have a higher chance of developing CHF, whereas those who drink light to moderately have a lower risk.[33]

The survival curves for elderly CHF participants split as their moderate alcohol intake beyond the sixth year, with the non-drinking elderly CHF subjects exhibiting superior survival. Patients who have been alcoholics for more than five years and consume more than 90 g of alcohol per day (about seven to eight standard drinks) are generally at risk of developing cardiomyopathy. Long-term drinking habits may cause symptoms in patients with CHF and increase their chance of death, especially as they get older. [33]

Chronic inflammation results from moderate amounts of long-term alcohol intake brought on by acetyl aldehyde exposure, and this inflammation is crucial to the pathophysiological mechanism underlying the development of HFpEF. The heart's capacity to neutralize the harmful effects of alcohol and its metabolites may be diminished if malfunction already exists. A dose-dependent rise in both systolic and diastolic LVD was shown by the Atherosclerosis Risk in Communities Study (ARIC). [34]

CHF AND QOL

Definition/Introduction

According to the World Health Organization, quality of life (QoL) is the subjective assessment of an individual's reality as it relates to their aspirations, as seen through the prism of their culture and value system.

Personal health (physical, mental, and spiritual), relationships, education, employment status, social standing, wealth, a sense of security and safety, freedom, decision-making autonomy, social belonging, and physical surroundings are common aspects of quality of life. [15]

Prior research has indicated that people with congestive heart failure have a lower quality of life. [35]

Comparison with the general population

The congestive heart failure sample demonstrated a global decline in quality of life across all SF-36 scales when compared to the general healthy population. Every quality-of-life index plummeted with NYHA functional class, with the domains of physical functioning, role function physical, and role function emotional showing the greatest declines in quality of life. Despite being in an ambulatory and compensated stage, all areas of quality of life were markedly impaired in NYHA classes II and III, indicating the significant impact of congestive heart failure on day-to-day living.

Comparison with other chronic diseases

The overall congestive heart failure sample in this study had a profile that was almost identical to that of a prior sample of patients receiving chronic hemodialysis. It may be claimed, therefore, that quality of life is affected similarly by all chronic medical conditions. On measures that evaluate physical health more, patients with chronic hepatitis C resembled those in NYHA class I who have congestive heart failure. In

terms of mental health, hepatitis C patients resembled NYHA class II patients more. [35]

It is noteworthy that individuals with congestive heart failure in NYHA class III not only saw a marked decline in their physical health but also saw a similar decline in their mental health categories in terms of quality of life as those with major depression. According to recent studies, a sizable portion of congestive heart failure patients suffer from depression. Patients in NYHA class III consequently have worse physical and mental quality of life. [35]

The absence of correlation between left ventricular ejection fraction and disease-specific quality of life, as noted in previous studies, was confirmed by the lack of variation in health-related quality of life among patients categorized based on their ejection fraction. [35]

Factors influencing the quality of life in individuals with chronic heart failure

Among CHF patients, three independent determinants of quality of life emerged: NYHA class, socioeconomic deprivation, and the presence of an informal caregiver. According to this study, CHF patients' low quality of life is caused by their higher NYHA class, low socioeconomic position, and absence of informal caregivers. Marital relationships improve the quality of life (QoL) for CHF patients compared to living alone. According to certain research, QoL declines with age. Patients with poor quality of life had a higher chance of hospital admissions for all reasons and CHF-related causes. [35]

According to a retrospective analysis of ASCEND-HF and a multiethnic comparison of the ACTION-HF (n = 1998) and ASIAN-HF (n = 3688) cohorts, HRQL was a significant predictor of death. Patients with milder symptoms (NYHA class I or II) who reported the lowest HRQL had a mortality rate of 29%, while patients with severe symptoms (NYHA class III or IV) who reported the highest HRQL had a mortality rate of only 16%. This implies that, as compared to the widely used NYHA class, self-reported HRQL is a more accurate predictor of prognosis in HF. [35]

High hospitalization and death rates are associated with poor quality of life. Patients' quality of life was positively impacted by self-care practices and positive psychological and spiritual well-being. In research involving heart failure patients, spirituality accounted for 24% of the variation in overall quality of life. Thus, more research is required to investigate spirituality and how it affects the quality of life in heart failure patients. [35]

Crucially, high rates of death and readmission (Lloyd-Jones et al. 2009; Muntwyler et al. 2002), along with a significant decline in health-related quality of life (Juenger et al. 2008), are characteristics of chronic heart failure. Independent of other biomedical risk factors, depression has been shown in numerous studies to negatively impact mortality (Pelle et al. 2008; Rutledge et al. 2006), readmission (Jiang et al. 2001; Song et al. 2009), and health-related quality of life (Carels 2004; Faller et al. 2010; Lane et al. 2001; Muller-Tasch et al. 2007). The majority of studies on anxiety show no correlation with death (Friedmann et al. 2006; Jiang et al. 2004; Pelle et al. 2008); nonetheless, several studies have previously shown that anxiety affects health-related quality of life (Chung et al. 2009; Lane et al. 2001).[35]

In this research, Jain, Agarwal, and colleagues found that patients without psychiatric illness and those in the subsyndromal group reported higher life satisfaction, a sense of safety, and greater energy for daily activities in comparison to those with psychiatric disorders. They were happier in their relationships and got along with people better. Additionally, they expressed greater satisfaction with the state of their living quarters and health services. According to the WHOQOL-BREF, individuals with psychiatric disorders in this instance had lower quality of life (QOL), with the severity of cardiac illness (NYHA class) having an impact on both the degree of QOL and the prevalence of anxiety and depression. [2]

MATERIALS AND METHODS

SOURCE OF DATA

The diagnosed cases of Chronic Heart Failure will be included from the outpatient and inpatient departments of General Medicine and Cardiology of Dayanand Medical College & Hospital, Ludhiana, after obtaining informed written consent from the patient.

METHOD OF COLLECTION OF DATA

This hospital-based, cross-sectional study will be conducted at Dayanand Medical College & Hospital, Ludhiana. A total of 200 patients with chronic heart failure will be included in the study.

INCLUSION CRITERIA

Patients of chronic heart failure presenting in the outpatient and inpatient departments of General Medicine and Cardiology, who are above the age of 18 years.

EXCLUSION CRITERIA-

Who is below 18 years old

Who does not consent to the study

Who have a primary psychiatric illness or are already on psychotropic drugs.

NUMBER OF CASES: 200 CASES

TOOLS

1. Mini International Neuropsychiatric Interview questionnaire for the assessment of the psychiatric co-morbidities. Psychiatrists and clinicians from the United States and Europe collaborated to create the Mini-International Neuropsychiatric Examination (M.I.N.I.) version 5.0.0, a brief structured diagnostic examination for DSM-IV and ICD-10 psychiatric illnesses. It is separated into 16 modules, each of which

stands for a diagnostic category and is denoted by a letter. It was created to address the requirement for a brief but precise structured psychiatric interview for multi-center clinical trials, and it takes about 15 minutes to administer.

2. The WHO-Quality of Life Assessment - BREF scale will be used to evaluate people's quality of life. It is made up of 26 items. A five-point Likert-type scale is used for each item. Four domains include the distribution of these items. The four categories of quality of life are as follows: (a) physical health and degree of independence, which is measured using seven items that cover topics including the presence of pain and discomfort, reliance on drugs or therapies, energy and weariness, mobility, sleep and rest, daily living activities, and perceived working capacity. (b) psychological well-being (eight items measuring the effect, higher cognitive functions, negative and positive self-concept, body image, and spirituality). (c) social ties (three questions measuring relationships with family, ability to care for family, and social contacts; sexual activity). (d) surroundings (eight items evaluating aspects including financial status, freedom, involvement in leisure activities, physical safety and security, and accessibility to health and social care).

Higher scores indicate a higher quality of life; domain scores are scaled positively. The domain score is determined by taking the average of the items within each domain. To make domain scores similar to the scores used in the WHOQOL-100, mean values are then multiplied by 4.

3. Socio-demographic proforma will include the name of the patient, age, gender, MRD number, occupation, education, income, marital status, duration of Chronic heart failure, grade/severity, history of smoking, address, contact number, psychiatric illness/s; contact number, score on WHOQOL-BREF.

OBSERVATION AND RESULTS

TABLE 1- AGE-WISE DISTRIBUTION OF CHF PATIENTS

Age	No. of cases	Percentage
≤ 44	11	5.5%
45-59	67	33.5%
60-74	90	45.0%
≥ 75	32	16.0%
Total	200	100.0%

	N	Minimum	Maximum	Mean	SD
AGE (IN YEARS)	200	30.00	87.00	62.08	11.44

FIGURE 1- AGE-WISE DISTRIBUTION OF CHF PATIENTS

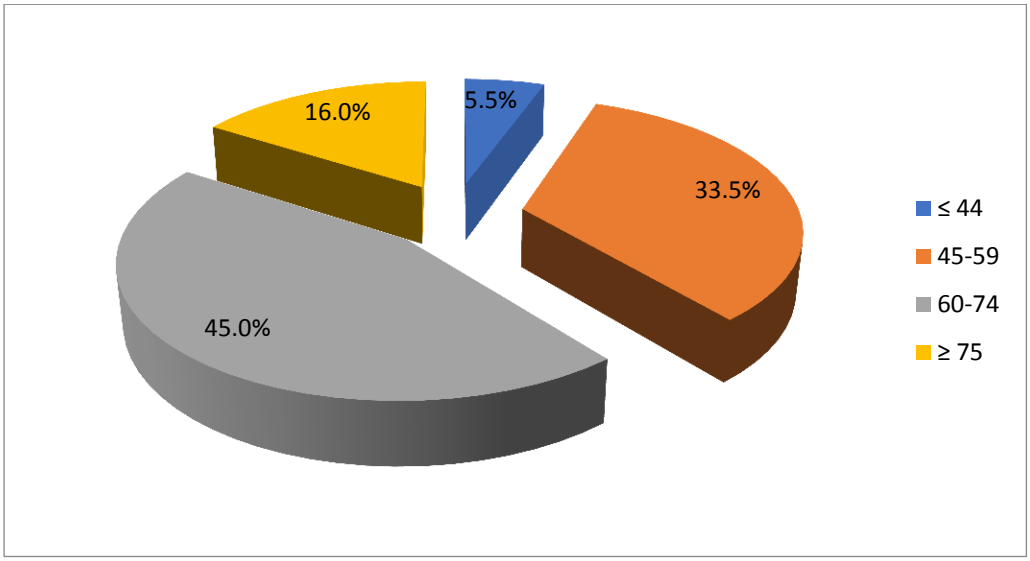

Table 1 and Figure 1 show the age-wise distribution of CHF patients. Out of 200 patients, 33.5% of them were in the age group of 45-59 years and 45% of the patients were in the 60–74-year age group, followed by 16% in the age group of ≥75 years and 5.5% in the age group of ≤44 years. The mean age of CHF patients was 62.08 ± 11.44 years in our study.

TABLE 2- GENDER VARIATION OF CHF PATIENTS

SEX	No. of cases	Percentage
F	74	37.0%
M	126	63.0%
Total	200	100.0%

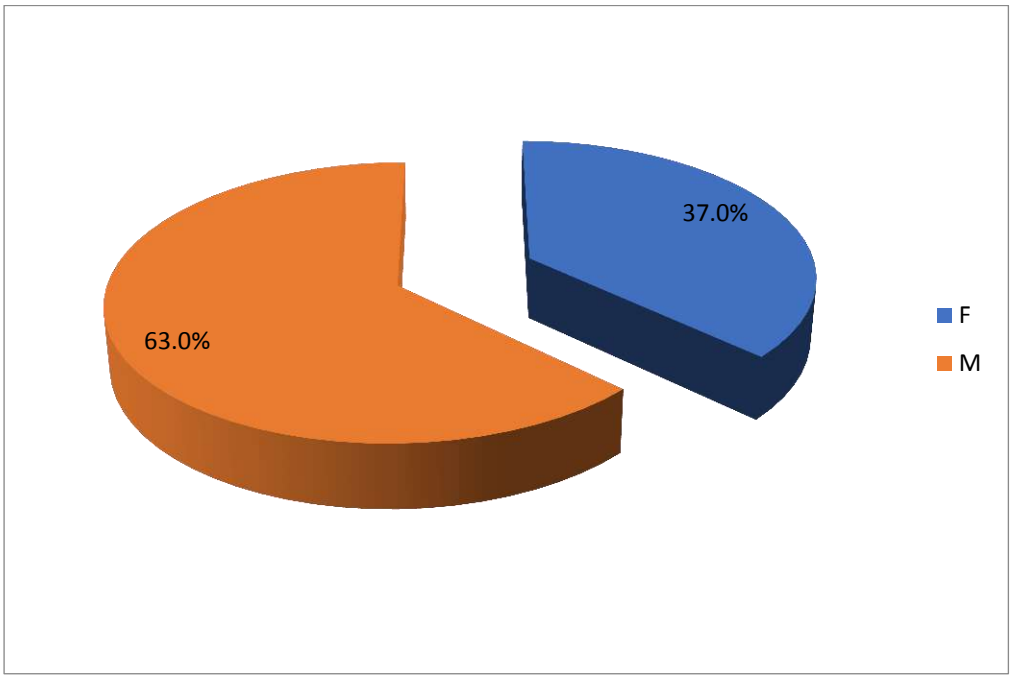

FIGURE 2- GENDER VARIATION OF CHF PATIENTS

Table 2 and Figure 2 show the gender-wise distribution of CHF patients. Out of 200 patients, 63% of them were males (N=126) and 37% of them were females (N=74). In our study, the majority of the CHF patients were males.

TABLE 3- DISTRIBUTION OF CHF PATIENTS ACCORDING TO LITERACY

EDUCATION	No. of cases	Percentage
Illiterate	52	26.0%
Literate	148	74.0%
Total	200	100.0%

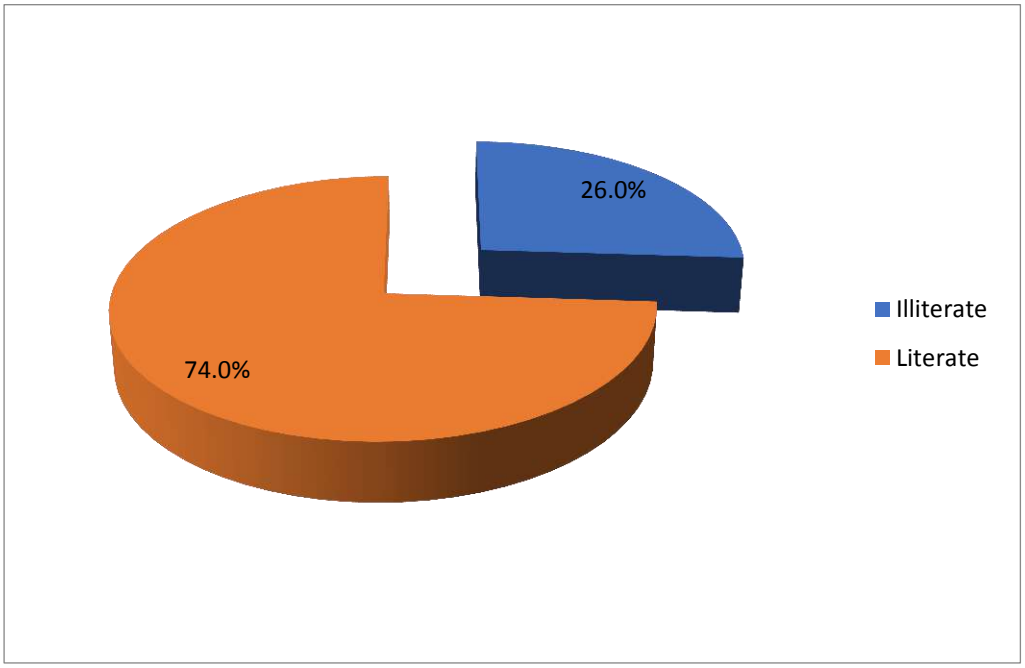

FIGURE 3- DISTRIBUTION OF CHF PATIENTS ACCORDING TO LITERACY

Table 3 and Figure 3 show the distribution of CHF patients according to their literacy. Out of 200 patients, 74% (N=148) were literate, and 26% (N=52) were illiterate. In our study majority of the patients were literate.

TABLE 4- MARITAL STATUS OF CHF PATIENTS

MARITAL STATUS	No. of cases	Percentage
Others	36	18.0%
Married	164	82.0%
Total	200	100.0%

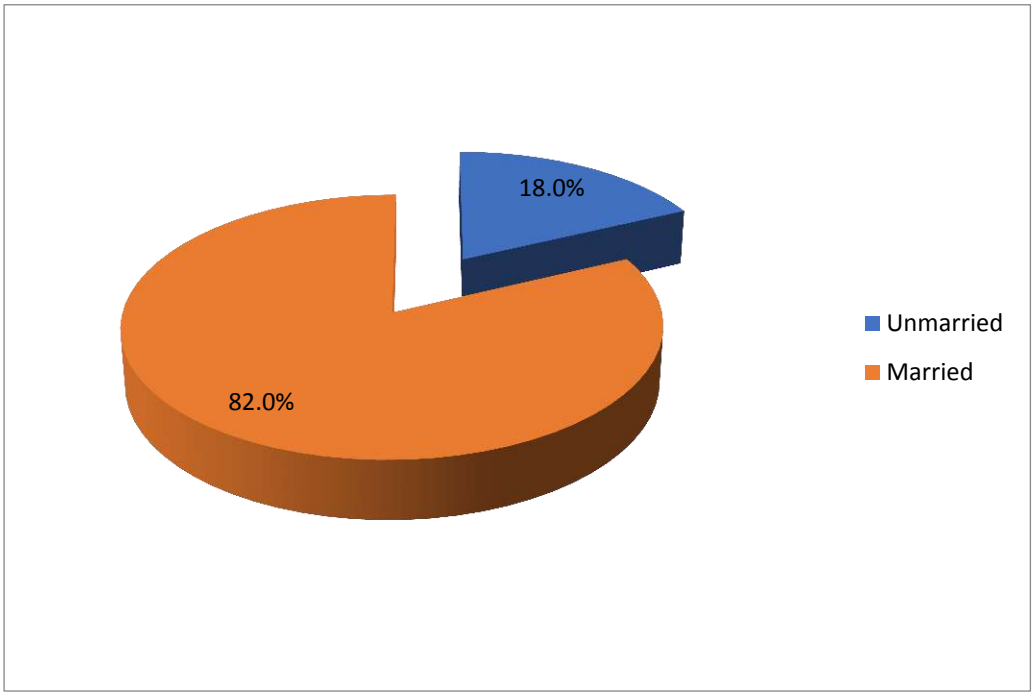

FIGURE 4- MARITAL STATUS OF CHF PATIENTS

Table 4 and Figure 4 show the distribution of CHF patients concerning their marital status. In our study, most of the CHF patients i.e. 82%(N=164) were married and 18%(N=36) were either unmarried or widow or widower, here categorized under the subgroup- Others.

TABLE-5- DISTRIBUTION OF CHF PATIENTS ACCORDING TO TYPE OF CHF

Type	No. of cases	Percentage
HFrEF	127	63.5%
HFmrEF	23	11.5%
HFpEF	50	25.0%
Total	200	100.0%

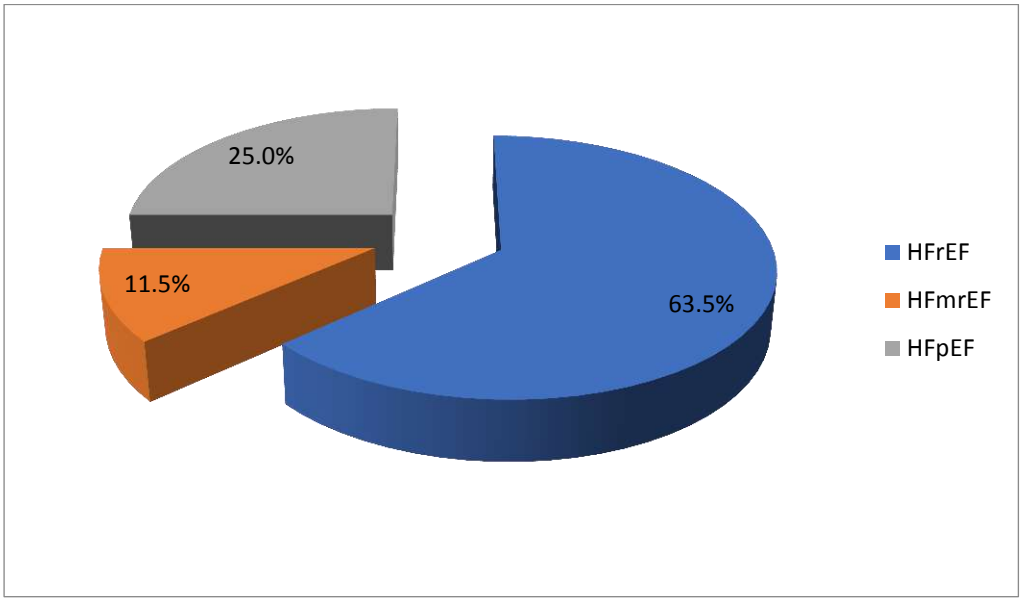

FIGURE-5- DISTRIBUTION OF CHF PATIENTS ACCORDING TO TYPE OF CHF

Table 5 and Figure 5 show the distribution of CHF patients according to the phenotype of CHF, i.e., HFrEF, HFmrEF, and HFpEF. In our study, 63.5%(N=127) of patients with CHF had HFrEF, 11.5% of patients had HFmrEF (N=23) and 25% (N=50) had HFpEF phenotype of CHF. Therefore, in our study majority of the patients had HFrEF-CHF.

TABLE 6- DISTRIBUTION OF CHF PATIENTS ACCORDING TO SEVERITY OF CHF

SEVERITY OF CHF- [NYHA}	No. of cases	Percentage
I	12	6.0%
II	62	31.0%
III	82	41.0%
IV	44	22.0%
Total	200	100.0%

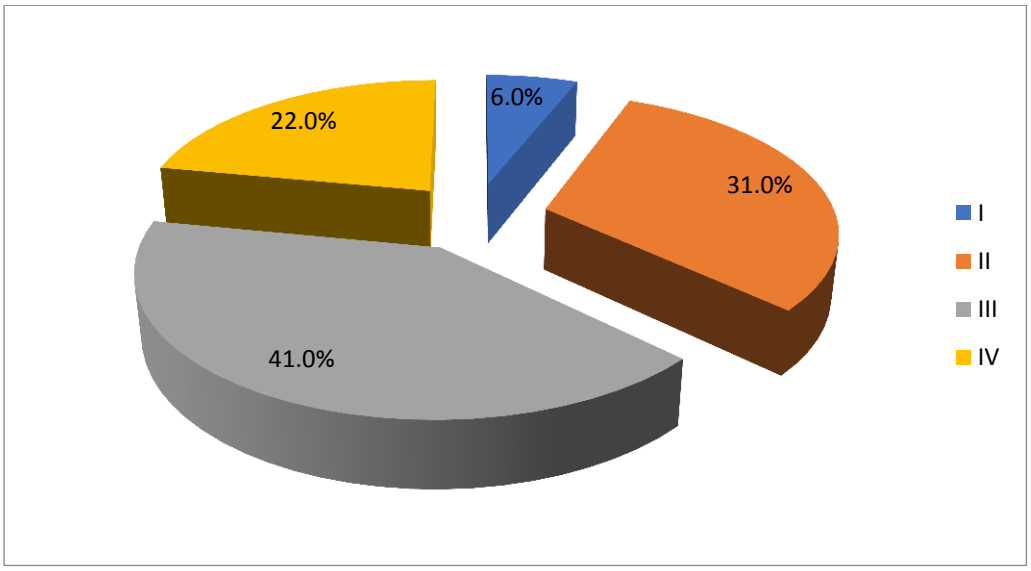

FIGURE-6 DISTRIBUTION OF CHF PATIENTS ACCORDING TO SEVERITY OF CHF

Table 6 and Figure 6 show the distribution of CHF patients according to the severity of the disease based on NYHA staging. Our study included patients from all NYHA classes of CHF. 41% had NYHA-III symptoms, 31% had NYHA-II symptoms, 22% belonged to NYHA-IV class of CHF and 6% had NYHA-I symptoms. Hence, as per our study, the majority of CHF patients had NYHA-III symptoms.

TABLE 7- DURATION OF CHF PATIENTS

DURATION	No. of cases	Percentage
≤ 5 YEARS	131	65.5%
5-10 YEARS	47	23.5%
≥ 11 YEARS	22	11.0%
Total	200	100.0%

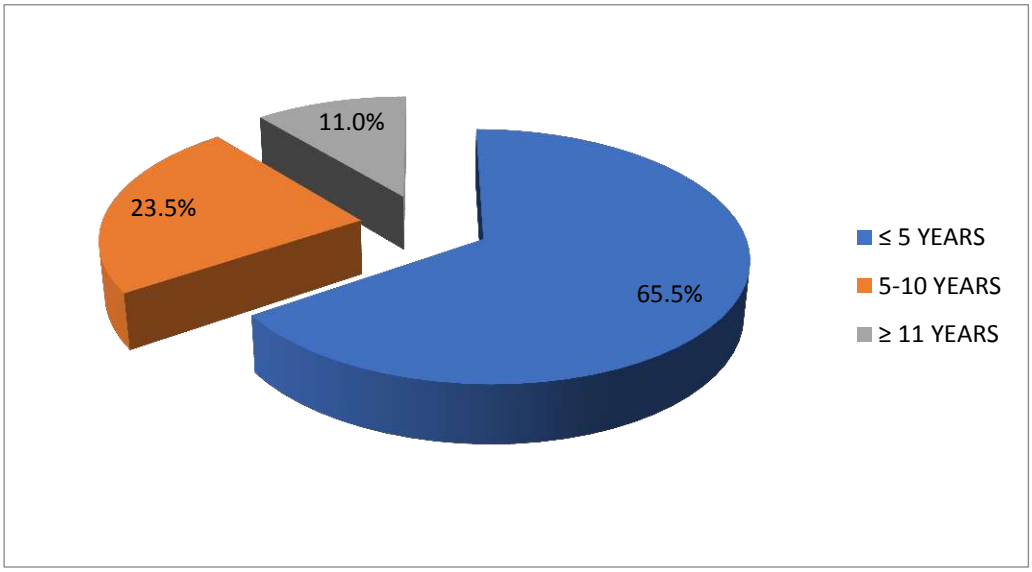

FIGURE 7- DURATION OF CHF PATIENTS

Table 7 and Figure 7 show the distribution of CHF patients concerning the duration of CHF. 65.5% of patients had CHF for <5 years followed by 23.5% of patients who had been suffering from CHF for 5-10 years and 11% of our study population had CHF for ≥11 years in duration. Therefore, per our study, the majority of the patients were diagnosed with CHF within the last 5 years.

TABLE 8- PREVALENCE OF PSYCHIATRIC COMORBIDITIES IN CHF PATIENTS

PSYCHIATRIC COMORBIDITY [M.I.N.I]	No. of cases	Percentage
ABSENT	115	57.5%
PRESENT	85	42.5%
Total	200	100.0%

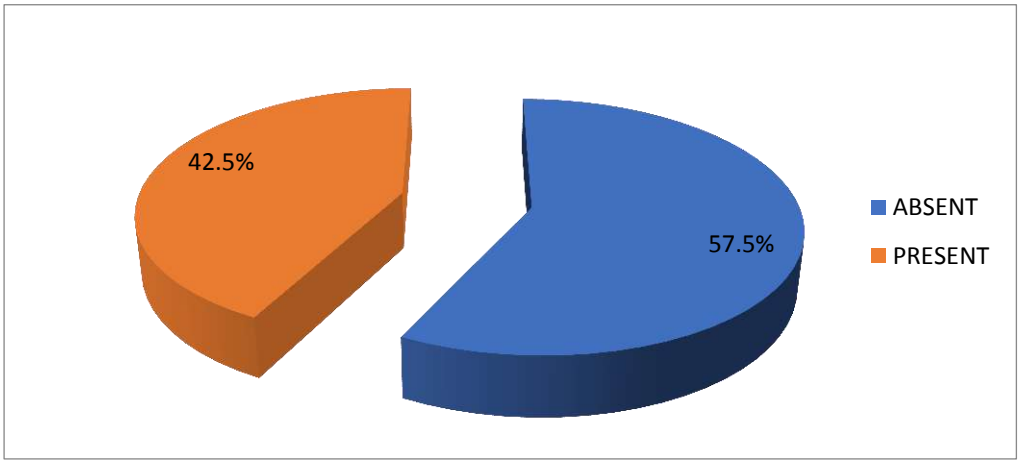

FIGURE 8- PREVALENCE OF PSYCHIATRIC COMORBIDITIES IN CHF PATIENTS

Table 8 and Figure 8 show the relation between CHF patients and with presence of psychiatric comorbidity. 42.5%(N=85) of the patients reported presence of psychiatric comorbidity whereas 57.5%(N=115) CHF patients did not have a psychiatric comorbidity. Hence, as per our study, there was a significant burden of psychiatric comorbidities in CHF patients.

TABLE 9- PREVALENCE OF SPECIFIC PSYCHIATRIC COMORBIDITIES IN CHF PATIENTS

PSYCHIATRIC COMORBIDITY [M.I.N.I]	No. of cases	Percentage
ABSENT	115	57.5%
ALCOHOL	11	5.5%
GAD	25	12.5%
MDD/RDD	38	19.0%
NASA	10	5.0%
PANIC	1	0.5%
Total	200	100.0%

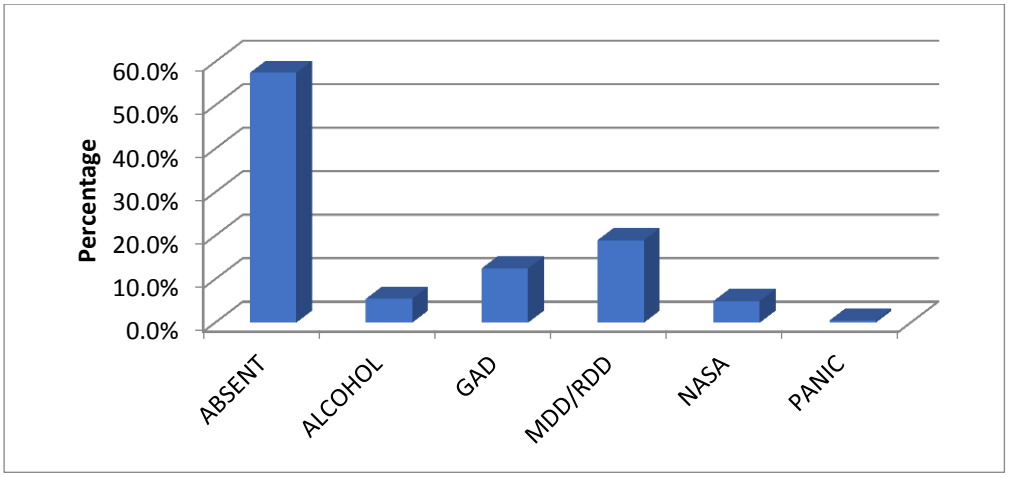

FIGURE-9 PREVALENCE OF SPECIFIC PSYCHIATRIC COMORBIDITIES IN CHF PATIENTS

Table 9 and Figure 9 show the relation of CHF patients with the presence of specific psychiatric comorbidity. 19% of the patients had MDD/RDD, 12.5% of the patients had GAD, 5.5% had Alcohol use, 5% had Non-Alcohol Substance Abuse (NASA) and 0.5% had panic disorder. Hence, the majority of the patients had either depressive illness or anxiety.

TABLE-10-OPD VS IPD DISTRIBUTION OF CHF PATIENTS

IPD/OPD	No. of cases	Percentage
I	143	71.5%
O	57	28.5%
Total	200	100.0%

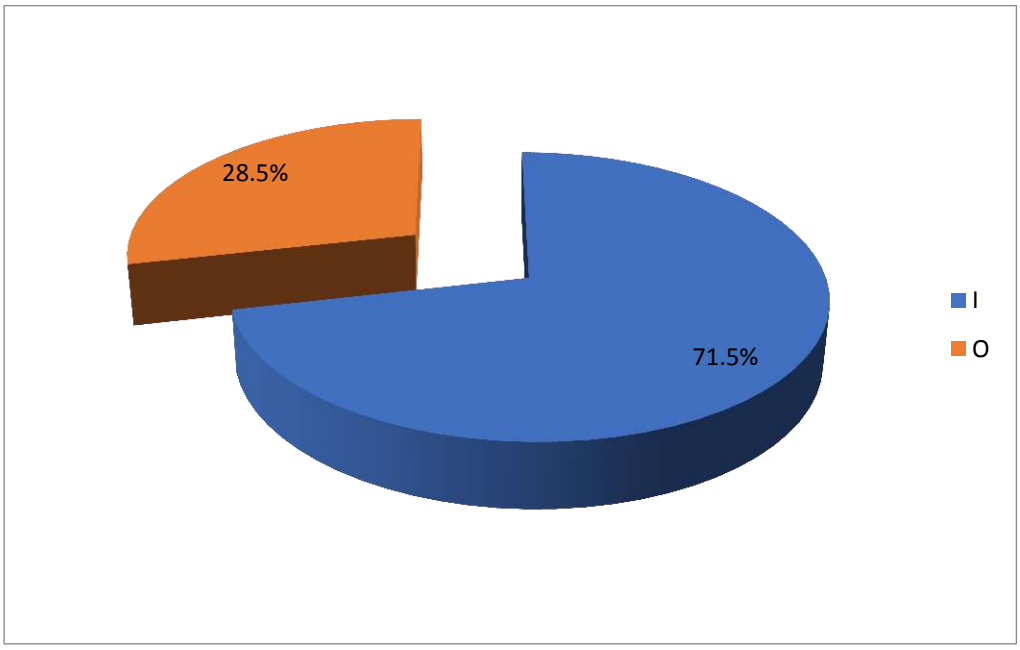

FIGURE-10-OPD VS IPD DISTRIBUTION OF CHF PATIENTS

Table 10 and Figure 10 show the distribution of CHF patients concerning OPD or IPD status. In our study, 71.5% of the study population were in-patients and 28.5% were out-patients.

TABLE-11-RELATION BETWEEN GENDER AND TYPE OF CHF

SEX	Type						Total	Chi-square value	p-value
	HFrEF		HFmrEF		HFpEF				
F	40	31.5%	7	30.4%	27	54.0%	74	8.275	0.016
M	87	68.5%	16	69.6%	23	46.0%	126		
Total	127	100.0%	23	100.0%	50	100.0%	200		

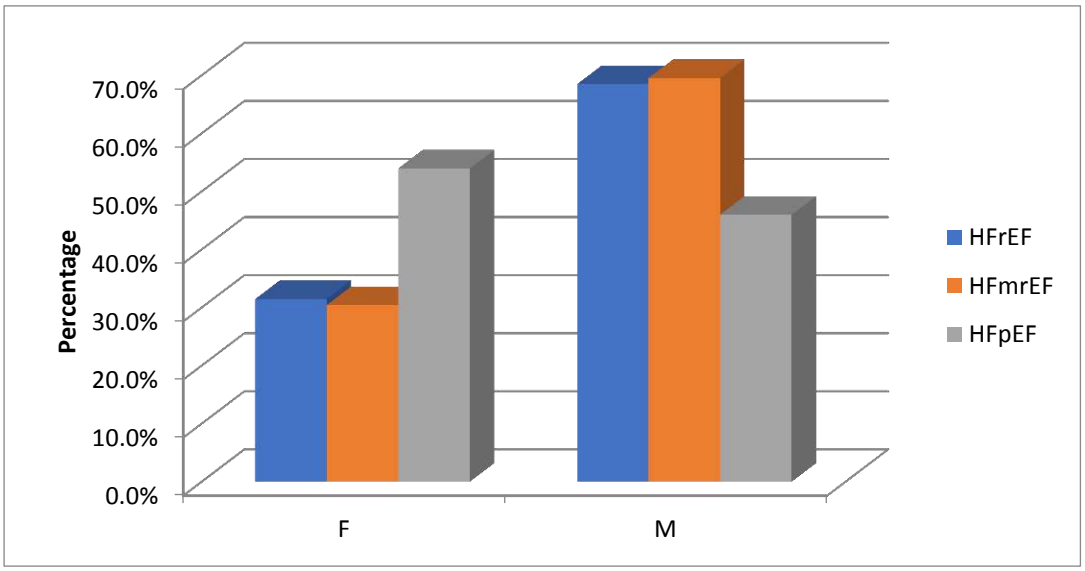

FIGURE-11-RELATION BETWEEN GENDER AND TYPE OF CHF

Table 11 and Figure 11 show the relationship between gender and phenotype of CHF. As per our study, of all 74 female patients with CHF, 27 had HFpEF, 7 had HFmrEF, and 40 had HFrEF-CHF. As far as males are concerned, out of 126 males with CHF, 23 had HFpEF, 16 had HFmrEF, and 87 had HFrEF-CHF. We found a statistically significant correlation between gender and type of CHF, such that, 54% of the HFpEF-CHF patients were females whereas only 46% of these patients were males. Also, when we looked at gender variation in HFrEF-CHF, we found that the majority (68.5%) were males. Hence, per our study, HFrEF-CHF was more common among males and HFpEF was more common among females and this inference is statistically significant with a chi-square value of 8.275 and p-value<0.05.

TABLE-12-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH SEVERITY OF CHF

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
SEVERITY OF CHF-[NYHA}	I	11	9.6%	1	1.2%	12	53.57	0.001
	II	56	48.7%	6	7.1%	62		
	III	34	29.6%	48	56.5%	82		
	IV	14	12.2%	30	35.3%	44		
Total		115	100.0%	85	100.0%	200		

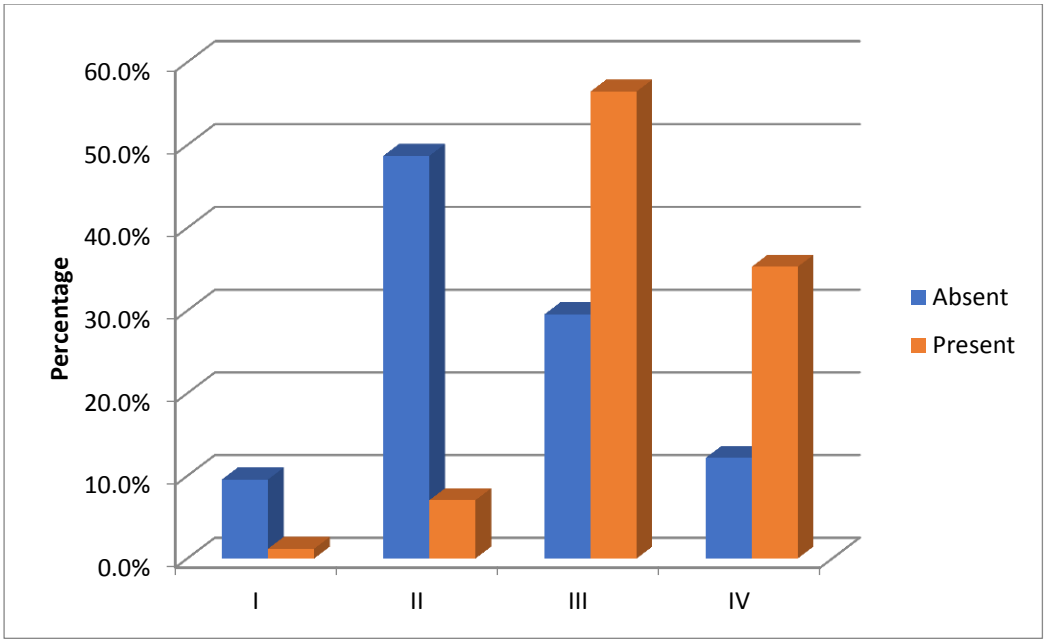

FIGURE-12-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH SEVERITY OF CHF

Table 12 and Figure 12 show the relation between the prevalence of psychiatric comorbidity in CHF patients and the severity of CHF. We found that out of all 85 patients who had psychiatric comorbidities, 56.5% of the patients had NYHA-III and 35.3% had NYHA-IV symptoms, with 7.1% who belonged to NYHA-II and 1.2% who had NYHA-I symptoms. We infer that there was a statistically significant correlation between the prevalence of psychiatric comorbidities in CHF patients and the severity of CHF, as the majority of the CHF patients who had co-existing psychiatric illness were in NYHA-III and NYHA-IV severity class of heart failure, p-value<0.05 and Chi-square value was 53.57.

TABLE-13-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH AGE

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
AGE	≤ 44	7	6.1%	4	4.7%	11	5.755	0.124
	45-59	44	38.3%	23	27.1%	67		
	60-74	51	44.3%	39	45.9%	90		
	≥ 75	13	11.3%	19	22.4%	32		
Total		115	100.0%	85	100.0%	200		

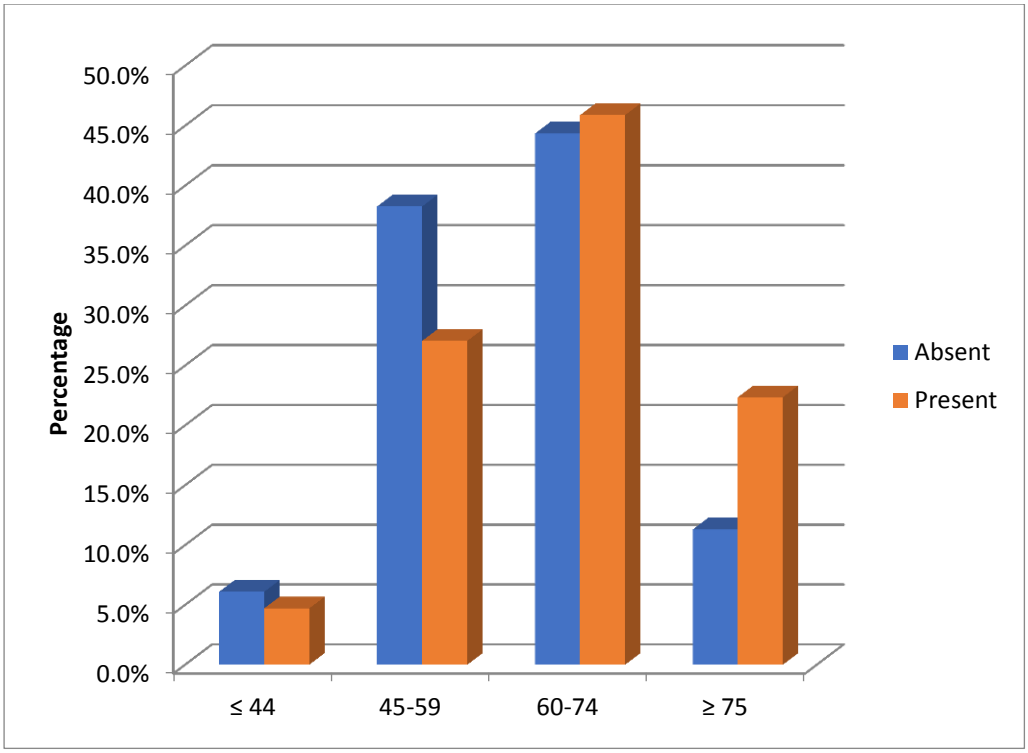

FIGURE-13-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH AGE

Table 13 and Figure 13 show the relation between the prevalence of psychiatric comorbidity in CHF patients and the age of CHF patients. We found that 45.9% of the patients with CHF who had psychiatric comorbidities were in the age group 60-74 years, i.e., the majority of the patients who had a co-existing psychiatric illness were elderly, but this result was not statistically significant, p-value >0.05.

TABLE-14-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH GENDER

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
SEX	F	41	35.7%	33	38.8%	74	0.211	0.66
	M	74	64.3%	52	61.2%	126		
Total		115	100.0%	85	100.0%	200		

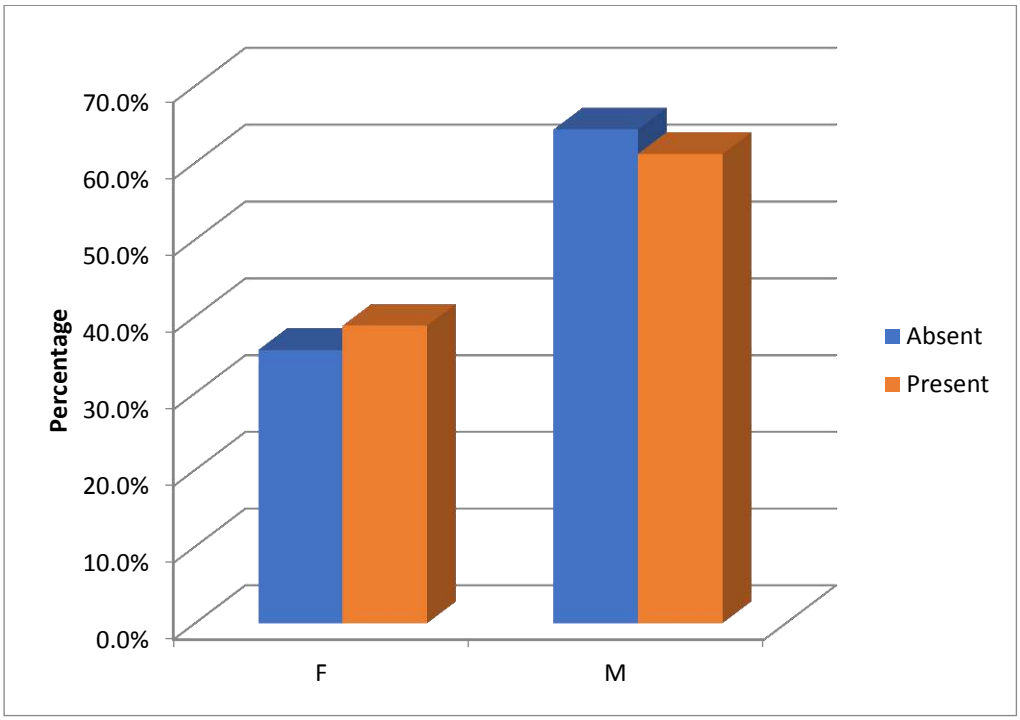

FIGURE-14-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH GENDER

Table 14 and Figure 14 show the relation between the prevalence of psychiatric comorbidities in CHF patients and gender. We found that of all 85 patients who had psychiatric comorbidities, 52 (61.2%) were males and 33 (38.8%) were females, showing male predominance but the result was not statistically significant, p-value >0.05.

TABLE-15-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH TYPE OF CHF

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
Type	HFrEF	69	60.0%	58	68.2%	127	3.045	0.218
	HFmrEF	12	10.4%	11	12.9%	23		
	HFpEF	34	29.6%	16	18.8%	50		
Total		115	100.0%	85	100.0%	200		

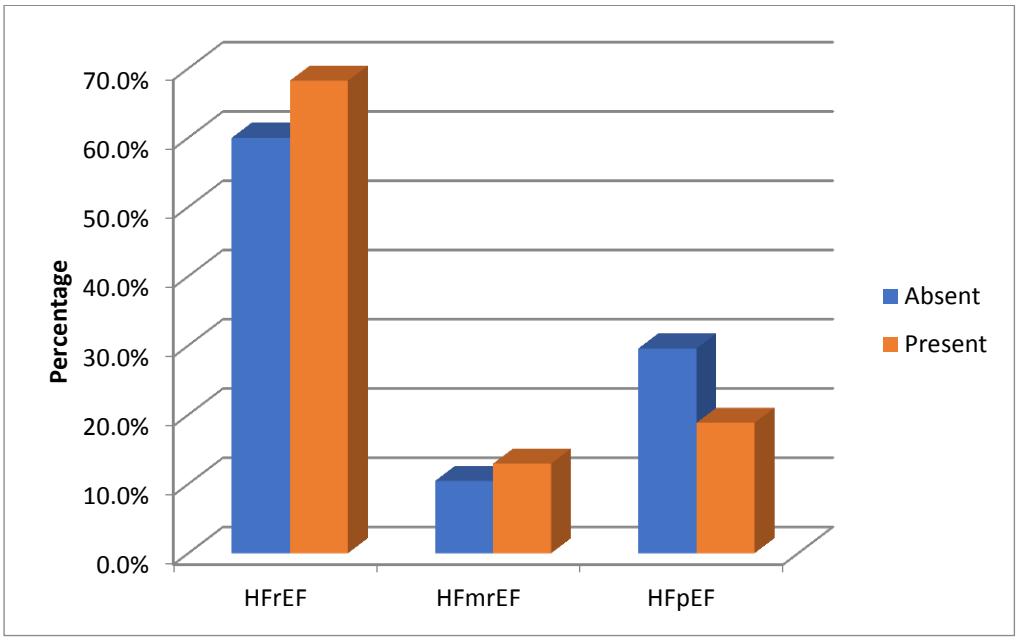

FIGURE-15-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH TYPE OF CHF

Table 15 and Figure 15 show the relation between the prevalence of psychiatric comorbidities and the type of CHF. In our study, we found that 68.2% of the CHF patients who had co-existing psychiatric illness had HFrEF-CHF, 12.9% had HFmrEF and 18.8% had HFpEF-CHF, such that it showed that HFrEF-CHF is more associated with the presence of psychiatric comorbidity, but this result was not statistically significant, p-value >0.05.

TABLE-16-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH DURATION OF CHF

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
DURATION	≤ 5 YEARS	72	62.6%	59	69.4%	131	7.059	0.029
	5-10 YEARS	34	29.6%	13	15.3%	47		
	≥ 11 YEARS	9	7.8%	13	15.3%	22		
Total		115	100.0%	85	100.0%	200		

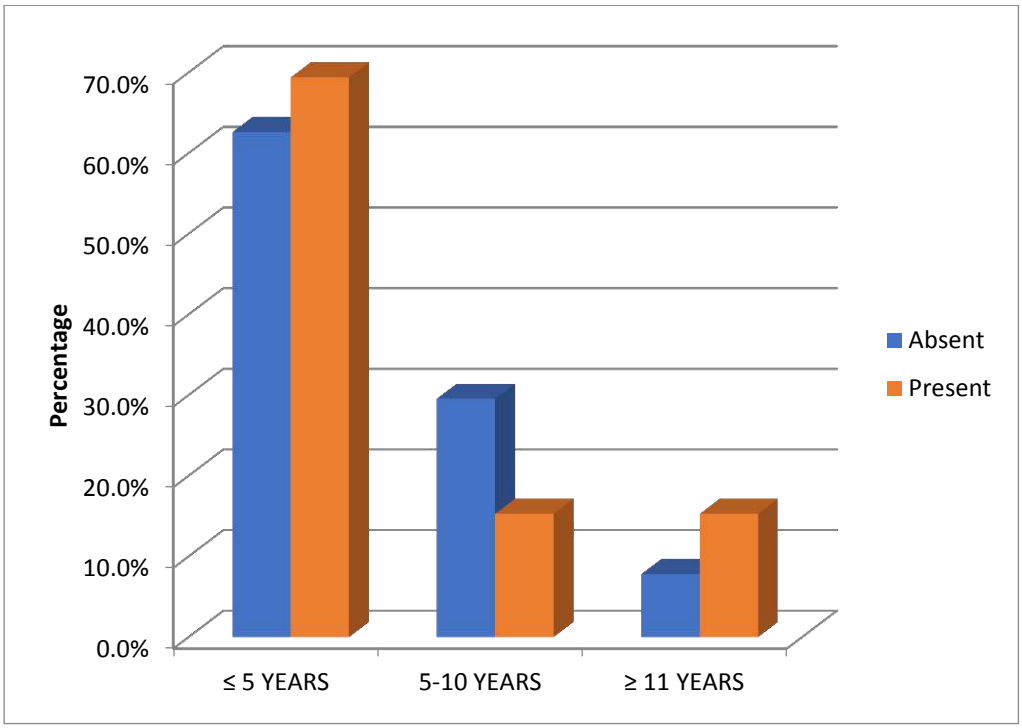

FIGURE-16-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH DURATION OF CHF

Table 15 and Figure 15 show the relation between the prevalence of psychiatric comorbidities and the duration of CHF. We found a statistically significant correlation here, such that, patients with CHF who were diagnosed within the last 5 years had increased prevalence of co-existing psychiatric illness, chi-square value=7.059 and p-value <0.05. In our study, 69.4% of CHF patients with psychiatric comorbidities had a disease duration of <5 years, 15.3% knew their CHF status for the last 5-10 years, and another 15.3% had ≥11 years of CHF duration.

TABLE-17a-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH IPD VS OPD STATUS OF CHF PATIENTS

	PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent		Present		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
IPD/OPD	I	66	57.4%	77	90.6%	143	26.432	0.001
	O	49	42.6%	8	9.4%	57		
Total		115	100.0%	85	100.0%	200		

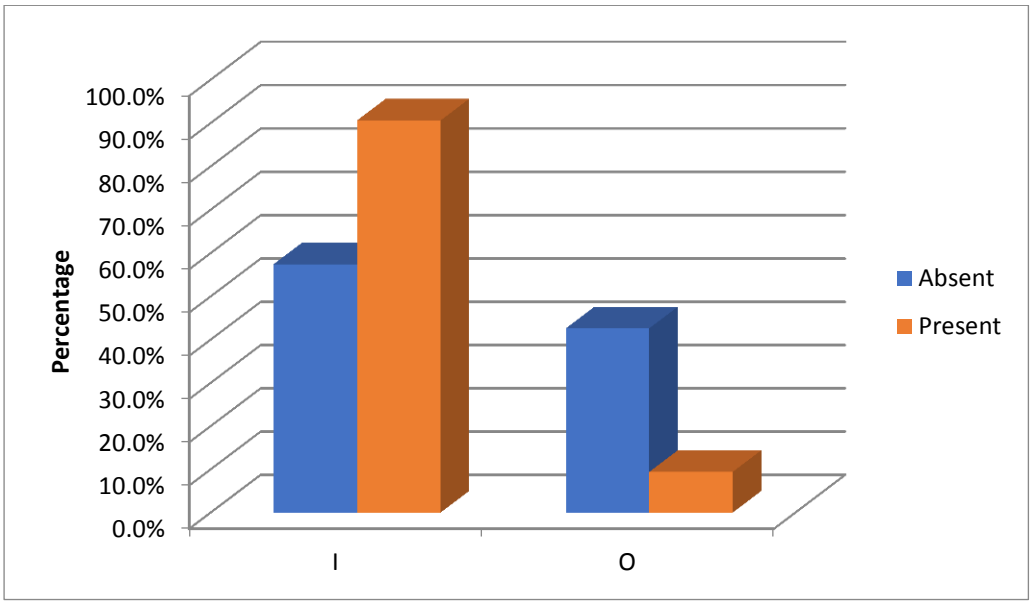

FIGURE-17a-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH IPD VS OPD STATUS OF CHF PATIENTS

Table 17a and Figure 17a show the relation between the prevalence of psychiatric comorbidities and the OPD/IPD status of CHF patients. We found that out of all 85 CHF patients who had a co-existing psychiatric illness, 90.6% were in-patients and only 9.4% were out-patients. Hence we got a statistically significant result that the in-patients were more prone to have a co-existing psychiatric illness than the out-patients, p-value being <0.05 and chi-square value = 26.432.

TABLE-17b-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH IPD VS OPD STATUS OF CHF PATIENTS-ONLY NYHA-II AND NYHA-III

		IPD/OPD [NYHA-II, NYHA-III]				Total	Chi-square value	p-value
		I		O				
PSYCHIATRIC COMORBIDITY [M.I.N.I] gp	Absent	52	53.1%	38	82.6%	90	11.661	0.001
	Present	46	46.9%	8	17.4%	54		
Total		98	100.0%	46	100.0%	144		

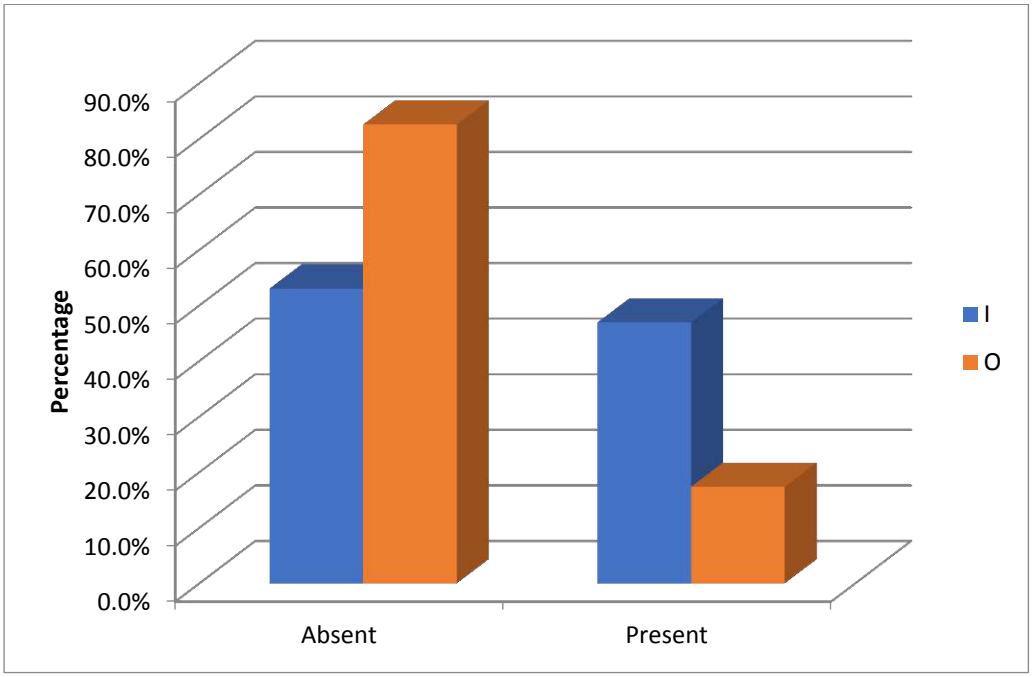

FIGURE-17b-RELATION BETWEEN PREVALENCE OF PSYCHIATRIC COMORBIDITIES WITH IPD VS OPD STATUS OF CHF PATIENTS-ONLY NYHA-II AND NYHA-III

Table 17b and Figure 17b shows the relation between the prevalence of psychiatric comorbidities and OPD/IPD status of only NYHA-II and NYHA-III CHF patients, as NYHA-I class was uncommon among the in-patients and NYHA-IV class was uncommon among out-patients. We found that out of these 144 CHF patients, 46 had psychiatric comorbidity, of these 38 (82.6%) were in-patients and 8 (17.4%) were out-patients, and this result was statistically significant with a chi-square value of 11.661 and p-value <0.05.

TABLE-18-RELATION BETWEEN PREVALENCE OF SPECIFIC PSYCHIATRIC COMORBIDITIES AND SEVERITY OF CHF

	SEVERITY OF CHF-[NYHA]	I		II		III		IV		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age	No. of cases	%age	No. of cases	%age			
PSYCHIATRIC COMORBIDITY [M.I.N.I]	ABSENT	11	91.7%	56	90.3%	34	41.5%	14	31.8%	115	67.138	0.001
	ALCOHOL	1	8.3%	1	1.6%	6	7.3%	3	6.8%	11		
	GAD	0	0.0%	3	4.8%	14	17.1%	8	18.2%	25		
	MDD/RDD	0	0.0%	2	3.2%	25	30.5%	11	25.0%	38		
	NASA	0	0.0%	0	0.0%	3	3.7%	7	15.9%	10		
	PANIC	0	0.0%	0	0.0%	0	0.0%	1	2.3%	1		
Total		12	100.0%	62	100.0%	82	100.0%	44	100.0%	200		

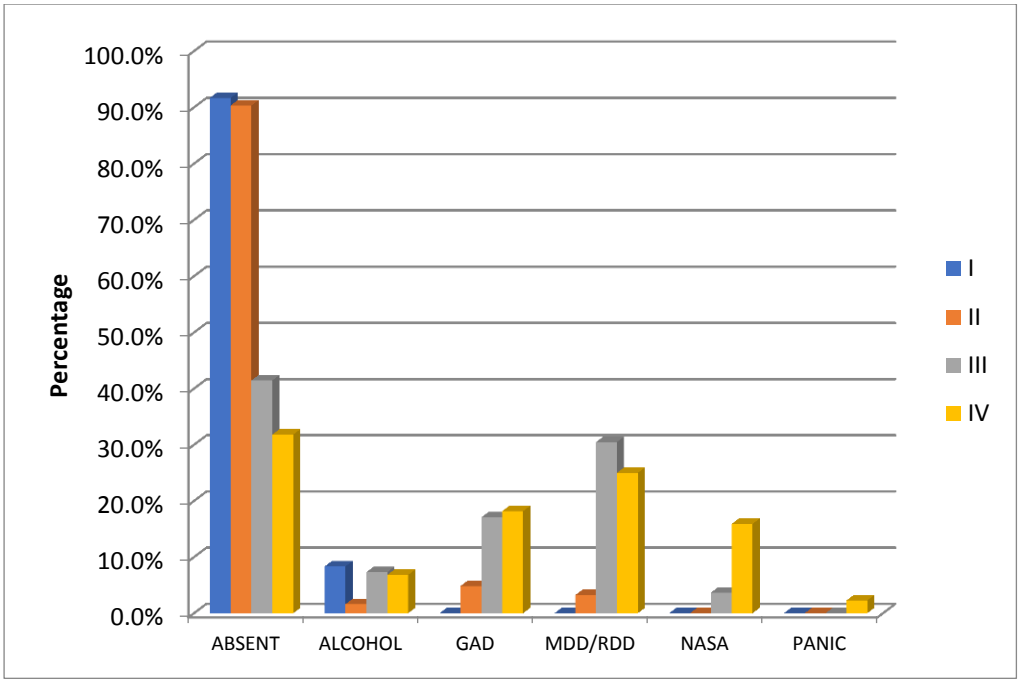

FIGURE-18 RELATION BETWEEN THE PREVALENCE OF SPECIFIC PSYCHIATRIC COMORBIDITIES AND SEVERITY OF CHF

Table 18 and Figure 18 show the relation between the prevalence of specific psychiatric comorbidities and the severity of CHF. Of all the 85 CHF cases with co-existing psychiatric illness, 38 had MDD/RDD, 25 had GAD, 11 had Alcohol use disorder, 10 had Non-Alcohol Substance Abuse (NASA) and 1 had panic disorder. We found that there was a statistically significant correlation between the prevalence of specific psychiatric comorbidities and the NYHA severity of CHF, such that out of 38 MDD/RDD cases, 25 had NYHA-III class symptoms and 11 had NYHA-IV class symptoms; out of 25 GAD cases, 14 belonged to NYHA-III and 8 to NYHA-IV; 6 out of 11 cases of Alcohol use disorder were in NYHA-III class and 3 were in NYHA-IV class; 7 out of 10 cases of NASA were in NYHA-IV class and 3 out of 10 were in NYHA-III and even that I case of panic disorder was seen in CHF patient who had NYHA-IV symptoms. This shows that all the above-studied psychiatric comorbidities were more commonly seen in CHF patients who had more severe symptoms on the NYHA spectrum, p-value<0.05 and chi-square value-67.138.

TABLE-19-QOL OF CHF PATIENTS (AS PER WHO-QOL BREF QUESTIONNAIRE)

	N	Minimum	Maximum	Mean	SD
PHYSICAL HEALTH [DOMAIN-1]	200	31.00	69.00	49.85	9.08
PSYCHOLOGICAL [DOMAIN-2]	200	31.00	75.00	56.57	9.04
SOCIAL RELATIONSHIPS [DOMAIN-3]	200	44.00	75.00	67.49	6.56
ENVIRONMENT [DOMAIN-4]	200	44.00	75.00	61.84	6.86

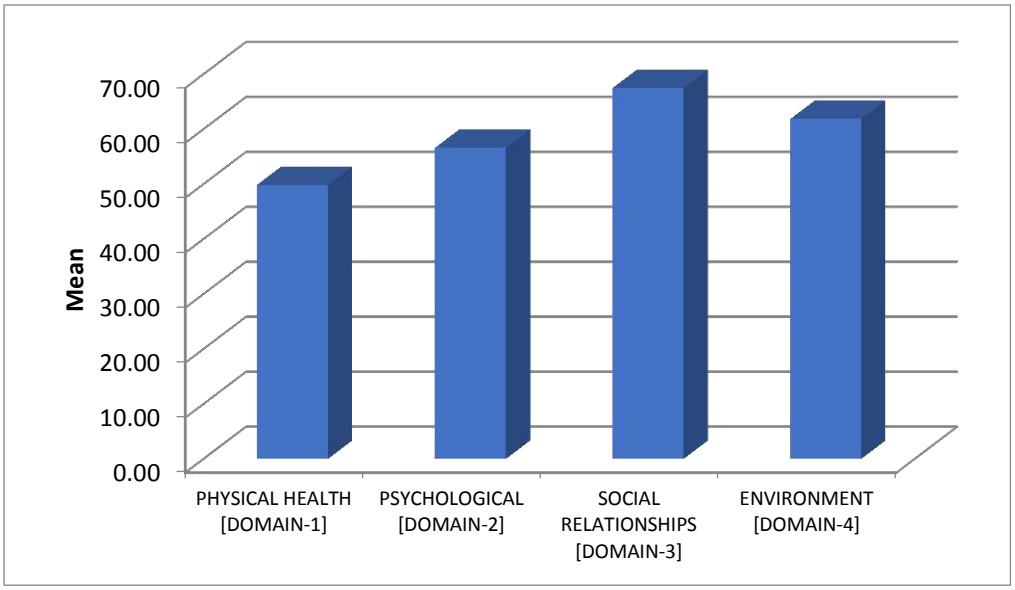

FIGURE-19-QOL OF CHF PATIENTS

Table 19 and Figure 19 show the mean WHO QOL BREF scores on 4 domains of CHF patients. The transformed scores (0-100) were analyzed. In domain 1 i.e. physical- the mean score was 49.85 (SD 9.08), domain 2 i.e. psychological - the mean score was 56.57 (SD 9.04), domain 3 i.e. social relationship -the mean score was 67.49 (SD 6.56) In and domain 4 i.e. environmental - the mean score was 61.84 (SD 6.86). this shows that mean QOL scores in all 4 domains of WHO-QOL BREF had low scores in all patients with CHF.

TABLE-20-RELATION OF QOL OF CHF PATIENTS WITH SEVERITY OF CHF

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
	SEVERITY					Lower Bound	Upper Bound				
PHYSICAL HEALTH [DOMAIN-1]	I	12	59.17	7.861	2.269	54.17	64.16	44	69	92.837	0.001
	II	62	57.24	6.878	.873	55.50	58.99	44	69		
	III	82	47.06	7.616	.841	45.39	48.73	31	63		
	IV	44	42.09	3.109	.469	41.15	43.04	38	50		
PSYCHOLOGICAL [DOMAIN-2]	I	12	61.92	8.764	2.530	56.35	67.49	50	75	6.221	0.001
	II	62	59.53	8.571	1.089	57.36	61.71	31	75		
	III	82	55.01	9.051	.999	53.02	57.00	31	69		
	IV	44	53.84	8.192	1.235	51.35	56.33	38	69		
SOCIAL RELATIONSHIPS [DOMAIN-3]	I	12	68.25	7.864	2.270	63.25	73.25	56	75	2.073	0.557
	II	62	66.50	7.140	.907	64.69	68.31	50	75		
	III	82	67.82	6.572	.726	66.37	69.26	44	75		
	IV	44	68.05	5.260	.793	66.45	69.64	56	75		
ENVIRONMENT [DOMAIN-4]	I	12	66.00	3.133	.905	64.01	67.99	63	69	6.978	0.001
	II	62	64.24	5.621	.714	62.81	65.67	50	75		
	III	82	60.59	7.243	.800	58.99	62.18	44	69		
	IV	44	59.66	7.114	1.072	57.50	61.82	50	69		

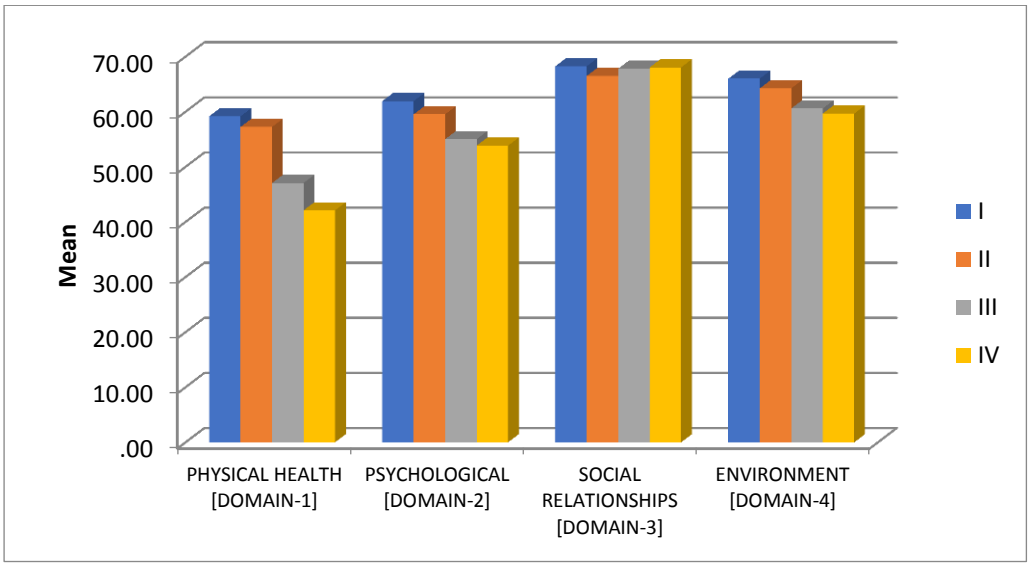

FIGURE-20-RELATION OF QOL OF CHF PATIENTS WITH SEVERITY OF CHF

Table 20 and Figure 20 compare the QOL scores of CHF patients and the NYHA severity of CHF. The transformed scores (0-100) on all domains were analyzed. We found that the Mean scores on Physical, Psychological, and Environmental domains decreased with worsening NYHA severity, such that for NYHA-I scores were (59.17, 61.92, 68.25, 66.00), in CHF patients with NYHA-II symptoms' scores were (57.24, 59.53, 66.50, 64.24), for NYHA-III and NYHA-IV scores were (47.06, 55.01, 67.82, 60.59) and (42.09, 53.84, 68.08, 59.06) respectively. This result was statistically significant for Physical, Psychological, and Environmental domains (p-values <0.05). We did not observe a statistically significant fall in QOL scores in the Social-relationships domain of WHO-QOL, for this, we hypothesize that CHF patients in our study received good social support from their friends and family and were maintained on medication and follow-up by them.

TABLE-21-RELATION OF QOL OF CHF PATIENTS WITH AGE

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
	Age group					Lower Bound	Upper Bound				
PHYSICAL HEALTH [DOMAIN-1]	≤ 44	11	52.55	9.822	2.961	45.95	59.14	38	63	16.587	0.001
	45-59	67	52.39	9.525	1.164	50.06	54.71	38	69		
	60-74	90	49.36	8.447	.890	47.59	51.12	31	63		
	≥ 75	32	45.00	7.633	1.349	42.25	47.75	38	63		
PSYCHOLOGICAL [DOMAIN-2]	≤ 44	11	61.82	8.292	2.500	56.25	67.39	56	75	2.875	0.037
	45-59	67	57.88	10.211	1.247	55.39	60.37	31	75		
	60-74	90	55.90	7.705	.812	54.29	57.51	31	75		
	≥ 75	32	53.91	9.372	1.657	50.53	57.29	31	69		
SOCIAL RELATIONSHIPS [DOMAIN-3]	≤ 44	11	69.36	7.187	2.167	64.54	74.19	56	75	2.419	0.49
	45-59	67	67.54	6.428	.785	65.97	69.11	56	75		
	60-74	90	67.41	6.333	.668	66.08	68.74	50	75		
	≥ 75	32	66.94	7.418	1.311	64.26	69.61	44	75		
ENVIRONMENT [DOMAIN-4]	≤ 44	11	63.91	7.382	2.226	58.95	68.87	50	69	1.524	0.209
	45-59	67	61.57	7.033	.859	59.85	63.28	50	69		
	60-74	90	62.49	6.257	.660	61.18	63.80	50	75		
	≥ 75	32	59.88	7.741	1.368	57.08	62.67	44	69		

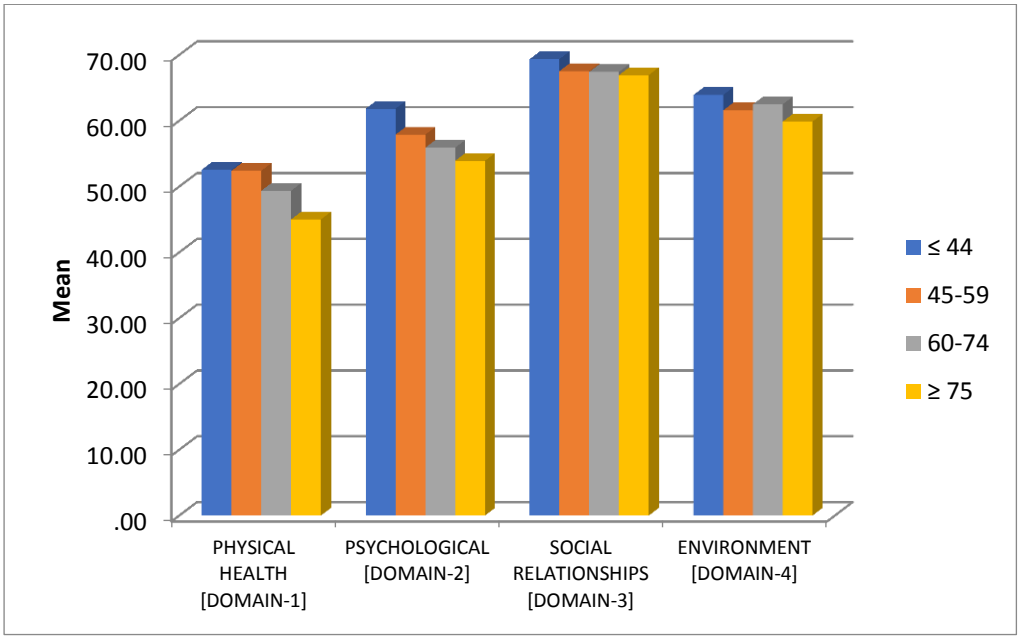

FIGURE-21-RELATION OF QOL OF CHF PATIENTS WITH AGE

Table 21 and Figure 21 compare the QOL scores of CHF patients and the age of CHF patients. The transformed scores (0-100) on all domains were analyzed. We found that the Mean scores on Physical and Psychological domains decreased with increasing age of CHF patients, such that for age ≤ 44 scores were (52.55, 61.82, 69.36, 63.91), in CHF patients with ages between 45-59 years scores were (52.39, 57.88, 67.54, 61.57), for age between 60-74 and ≥ 75 scores were (49.36, 55.90, 67.41, 62.49) and (45.00, 53.91, 66.94, 59.88) respectively. This result was statistically significant for the Physical and Psychological domains (p-values <0.05). We did not observe a statistically significant fall in QOL scores in the Social-relationships and Environmental domains of WHO-QOL.

TABLE-22-RELATION OF QOL OF CHF PATIENTS WITH GENDER

	SEX	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	F	74	47.43	8.574	.997	-2.942	0.004
	M	126	51.27	9.096	.810		
PSYCHOLOGICAL [DOMAIN-2]	F	74	53.53	8.585	.998	-3.767	0.001
	M	126	58.36	8.851	.789		
SOCIAL RELATIONSHIPS [DOMAIN-3]	F	74	68.38	5.446	.633	1.480	0.140
	M	126	66.96	7.104	.633		
ENVIRONMENT [DOMAIN-4]	F	74	59.76	6.822	.793	-3.376	0.001
	M	126	63.06	6.608	.589		

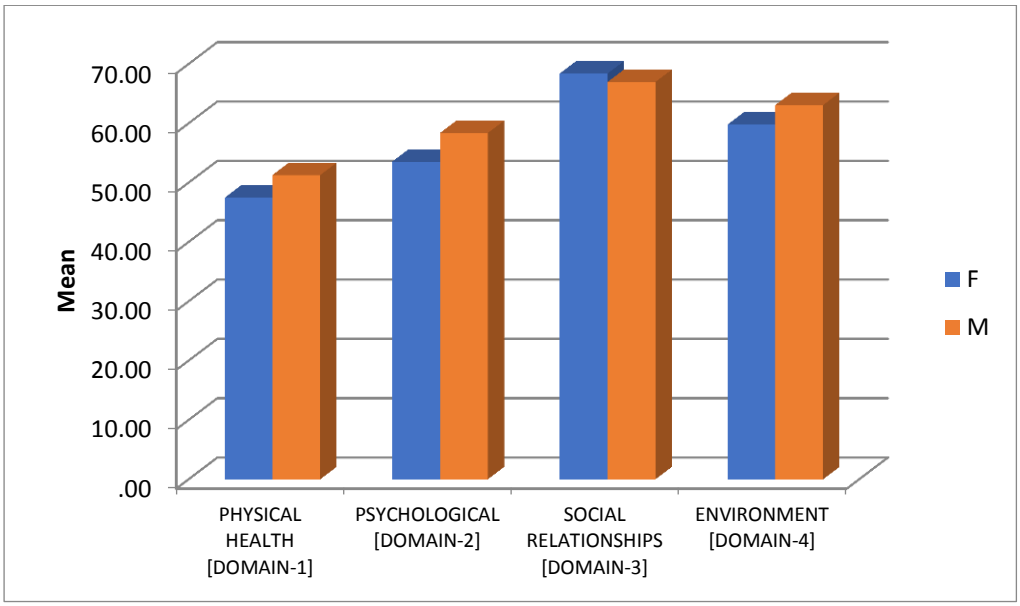

FIGURE-22-RELATION OF QOL OF CHF PATIENTS WITH GENDER

Table 22 and Figure 22 compare the QOL scores of CHF patients and the gender of CHF patients. We found a statistically significant difference between QOL scores of male CHF patients and female CHF patients in the Physical, Psychological, and Environmental domains, p-value <0.05. Per our study, QOL scores for male CHF patients and female CHF patients in all 4 domains are (51.27, 58.36, 66.96, 63.06) and (47.43, 53.53, 68.38, 59.76) respectively. We did not find a statistically significant difference in QOL scores in the social relationship domain.

TABLE-23-RELATION OF QOL OF CHF PATIENTS WITH LITERACY

	Education	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	Illiterate	52	48.56	8.454	1.172	-1.071	0.284
	literate	148	50.30	9.270	.762		
PSYCHOLOGICAL [DOMAIN-2]	Illiterate	52	55.73	7.84	1.09	-0.777	0.438
	literate	148	56.86	9.43	.78		
SOCIAL RELATIONSHIPS [DOMAIN-3]	Illiterate	52	68.54	5.101	.707	-0.81	0.418
	literate	148	67.11	6.981	.574		
ENVIRONMENT [DOMAIN-4]	Illiterate	52	60.56	6.48	.90	-1.573	0.117
	literate	148	62.29	6.95	.57		

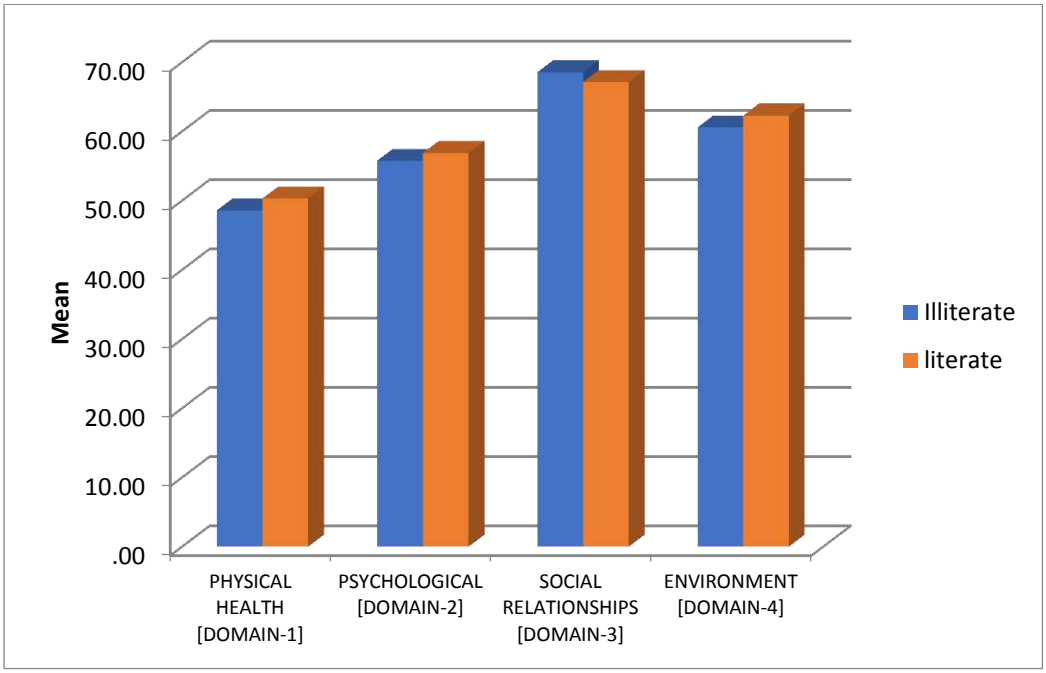

FIGURE-23- RELATION OF QOL OF CHF PATIENTS WITH LITERACY

Table 23 and Figure 23 show the correlation of QOL of CHF patients with literacy. We did not find a statistically significant difference in the WHO-QOL scores between the literate and the illiterate study population, p-value >0.05. we hypothesize that our study population mostly comprised literate patients and due to this skewness, we did not achieve statistically significant results.

TABLE-24-RELATION OF QOL OF CHF PATIENTS WITH MARITAL STATUS

	Martial Status	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	Others	36	47.11	8.532	1.422	-2.1	0.036
	Married	164	50.45	9.107	.711		
PSYCHOLOGICAL [DOMAIN-2]	Others	36	52.75	9.81	1.64	-2.85	0.005
	Married	164	57.41	8.67	.68		
SOCIAL RELATIONSHIPS [DOMAIN-3]	Others	36	67.67	5.682	.947	-0.25	0.803
	Married	164	67.45	6.754	.527		
ENVIRONMENT [DOMAIN-4]	Others	36	60.78	6.65	1.11	-1.026	0.306
	Married	164	62.07	6.90	.54		

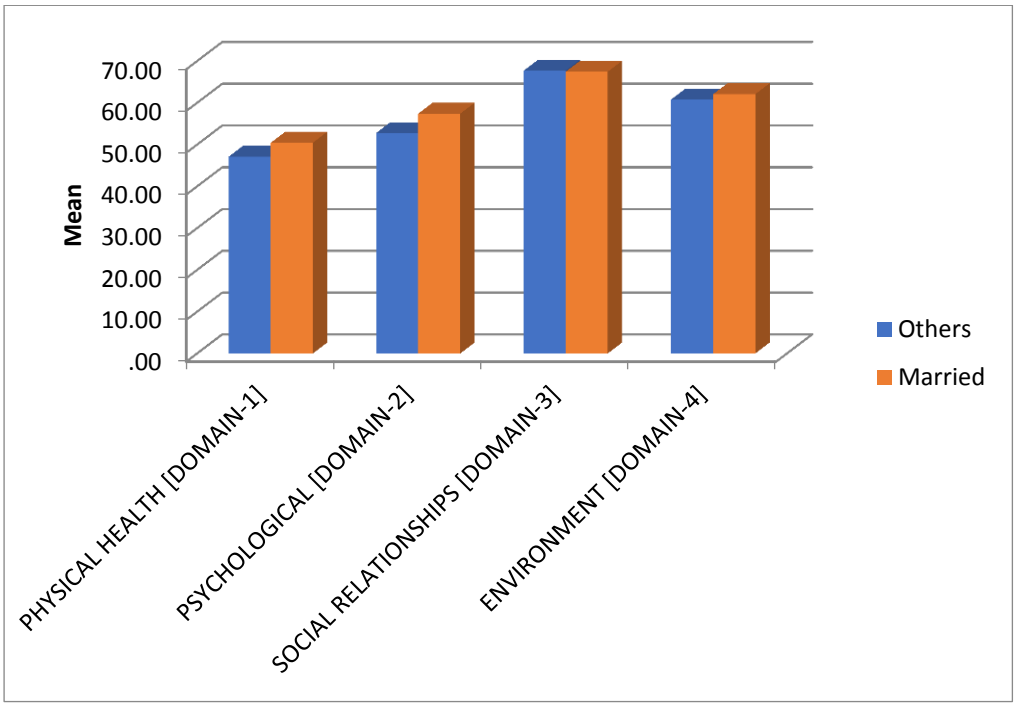

FIGURE-24-RELATION OF QOL OF CHF PATIENTS WITH MARITAL STATUS

Table 24 and Figure 24 correlate the QOL of CHF patients with their marital status. The mean QOL scores in the Physical and Psychological domains were higher in married patients in contrast to divorced /widow/ widower patients and this difference was statistically significant, (p-value <0.05). It showed that quality of life, as far as physical and psychological aspects are concerned, was better in married patients than in the divorced/ widow/ widower group. We did not find a similar statistical correlation in the case of the social relationship and Environmental domains of QOL.

TABLE-25-RELATION OF QOL OF CHF PATIENTS WITH TYPE OF CHF

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
	Type					Lower Bound	Upper Bound				
PHYSICAL HEALTH [DOMAIN-1]	HFrEF	127	49.45	9.402	.834	47.80	51.10	31	69	2.48	0.289
	HFmrEF	23	48.61	8.245	1.719	45.04	52.17	38	63		
	HFpEF	50	51.44	8.548	1.209	49.01	53.87	38	63		
PSYCHOLOGICAL [DOMAIN-2]	HFrEF	127	56.86	9.18	.81	55.25	58.47	31.00	75.00	875	0.419
	HFmrEF	23	57.91	9.51	1.98	53.80	62.02	38.00	69.00		
	HFpEF	50	55.22	8.47	1.20	52.81	57.63	38.00	75.00		
SOCIAL RELATIONSHIPS [DOMAIN-3]	HFrEF	127	66.98	6.679	.593	65.81	68.16	44	75	5.036	0.081
	HFmrEF	23	69.65	6.110	1.274	67.01	72.29	56	75		
	HFpEF	50	67.76	6.362	.900	65.95	69.57	50	75		
ENVIRONMENT [DOMAIN-4]	HFrEF	127	62.09	6.85	.61	60.88	63.29	44.00	75.00	0.663	0.517
	HFmrEF	23	62.52	6.77	1.41	59.60	65.45	50.00	69.00		
	HFpEF	50	60.90	6.98	.99	58.92	62.88	50.00	69.00		

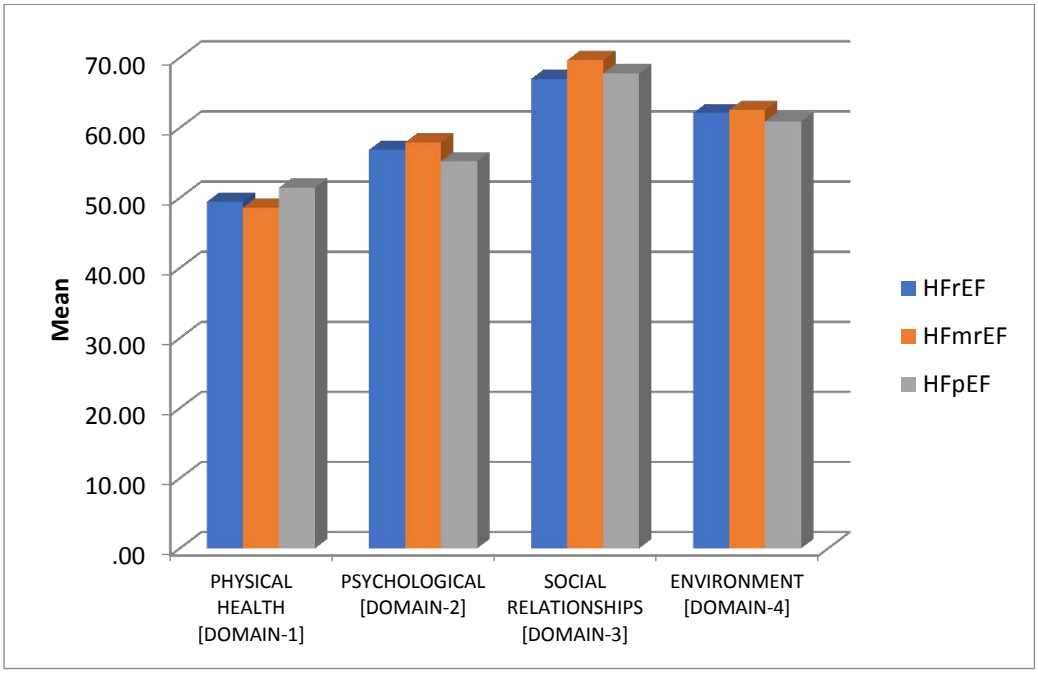

FIGURE-25-RELATION OF QOL OF CHF PATIENTS WITH TYPE OF CHF

Table 25 and Figure 25 show the correlation between the QOL of CHF patients and the type of CHF (HFrEF, HFmrEF, or HFpEF). Per our study, there was no statistically significant difference among the QOL scores of HFrEF-CHF, HFmrEF, and HFpEF-CHF patients, p-value >0.05. so, as per our analysis of CHF patients, QOL scores do not vary much among these different phenotypes of CHF.

TABLE-26-RELATION OF QOL OF CHF PATIENTS WITH THE PRESENCE OF PSYCHIATRIC COMORBIDITIES

	PSYCHIATRIC COMORBIDITY [M.I.N.I]	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	Absent	115	52.56	9.185	.857	-4.977	0.001
	Present	85	46.19	7.555	.819		
PSYCHOLOGICAL [DOMAIN-2]	Absent	115	59.97	8.51	.79	-6.877	0.001
	Present	85	51.96	7.61	.83		
SOCIAL RELATIONSHIPS [DOMAIN-3]	Absent	115	67.77	6.682	.623	-1.104	0.27
	Present	85	67.11	6.414	.696		
ENVIRONMENT [DOMAIN-4]	Absent	115	63.92	5.68	.53	-5.324	0.001
	Present	85	59.02	7.34	.80		

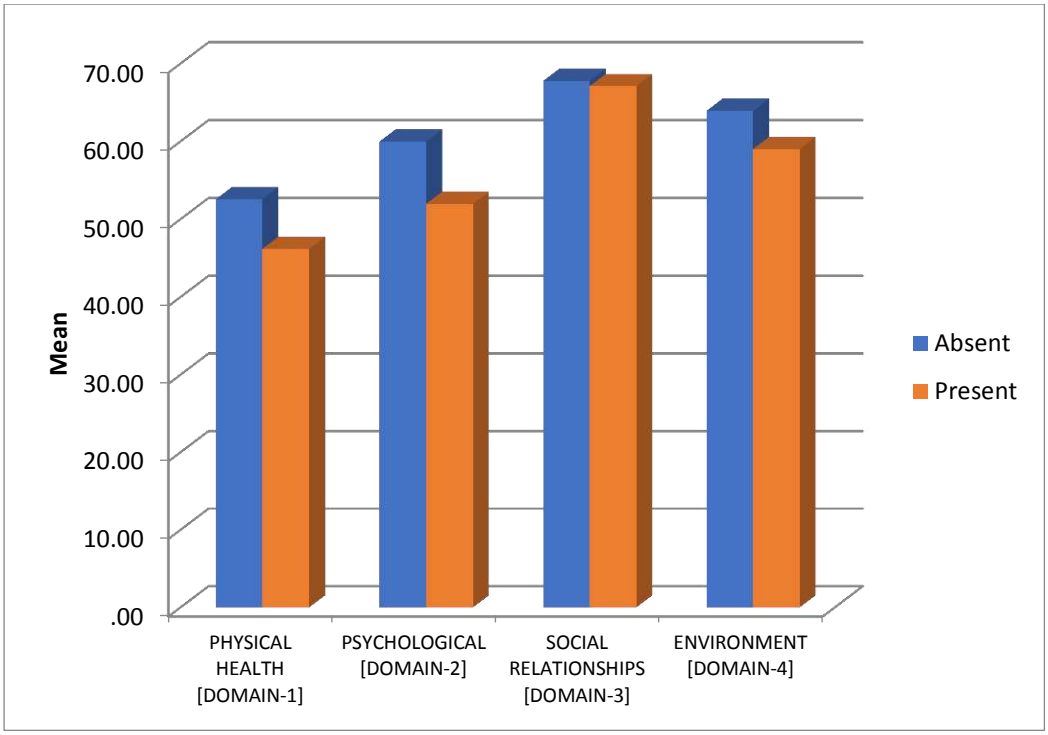

FIGURE-26-RELATION OF QOL OF CHF PATIENTS WITH THE PRESENCE OF PSYCHIATRIC COMORBIDITIES

Table 26 and Figure 26 show the relation of QOL of CHF patients with the presence of psychiatric comorbidity. The mean scores on all 4 domains of the WHO-QOL BREF scale decreased with the presence of psychiatric illness (46.19, 51.96, 67.11, 59.02) as compared to when there was no co-existing Psychiatric illness (52.56, 59.97, 67.77, 63.92), but the statistically significant difference was found only for Physical, Psychological and Environmental domains of WHO-QOL BREF scale, p-value <0.05. We infer that CHF patients with psychiatric comorbidities had worse QOL as compared to CHF patients without any co-existing psychiatric illness.

TABLE-27-RELATION OF QOL OF CHF PATIENTS WITH SPECIFIC PSYCHIATRIC COMORBIDITIES

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
	PSYCHIATRIC COMORBIDITY [M.I.N.I]					Lower Bound	Upper Bound				
PHYSICAL HEALTH [DOMAIN-1]	ABSENT	115	52.56	9.185	.857	50.86	54.25	31	69	27.318	0.001
	ALCOHOL	11	50.27	10.460	3.154	43.25	57.30	38	69		
	GAD	25	45.44	6.545	1.309	42.74	48.14	38	56		
	MDD/RDD	38	45.79	7.360	1.194	43.37	48.21	38	63		
	NASA	10	45.30	7.088	2.241	40.23	50.37	38	63		
	PANIC	1	44.00	.	.	.	.	44	44		
PSYCHOLOGICAL [DOMAIN-2]	ABSENT	115	59.97	8.51	.79	58.40	61.55	31	75	18.203	0.001
	ALCOHOL	11	60.18	7.21	2.17	55.34	65.02	50	69		
	GAD	25	51.68	3.68	.74	50.16	53.20	44	56		
	MDD/RDD	38	47.74	6.59	1.07	45.57	49.90	31	56		
	NASA	10	59.90	6.28	1.99	55.41	64.39	56	69		
	PANIC	1	50.00	.	.	.	.	50	50		
SOCIAL RELATIONSHIPS [DOMAIN-3]	ABSENT	115	67.77	6.682	.623	66.53	69.00	50	75	3.575	0.612
	ALCOHOL	11	67.64	7.941	2.394	62.30	72.97	56	75		
	GAD	25	67.64	5.544	1.109	65.35	69.93	56	75		
	MDD/RDD	38	66.08	6.898	1.119	63.81	68.35	44	75		
	NASA	10	68.90	5.174	1.636	65.20	72.60	56	75		
	PANIC	1	69.00	.	.	.	.	69	69		
ENVIRONMENT [DOMAIN-4]	ABSENT	115	63.92	5.68	.53	62.87	64.97	50	75	7.593	0.0001
	ALCOHOL	11	62.91	4.91	1.48	59.61	66.21	50	69		
	GAD	25	58.48	6.65	1.33	55.74	61.22	50	69		
	MDD/RDD	38	57.66	7.97	1.29	55.04	60.28	44	69		
	NASA	10	60.30	7.50	2.37	54.94	65.66	50	69		
	PANIC	1	69.00	.	.	.	.	69	69		

FIGURE-27-RELATION OF QOL OF CHF PATIENTS WITH SPECIFIC PSYCHIATRIC COMORBIDITIES

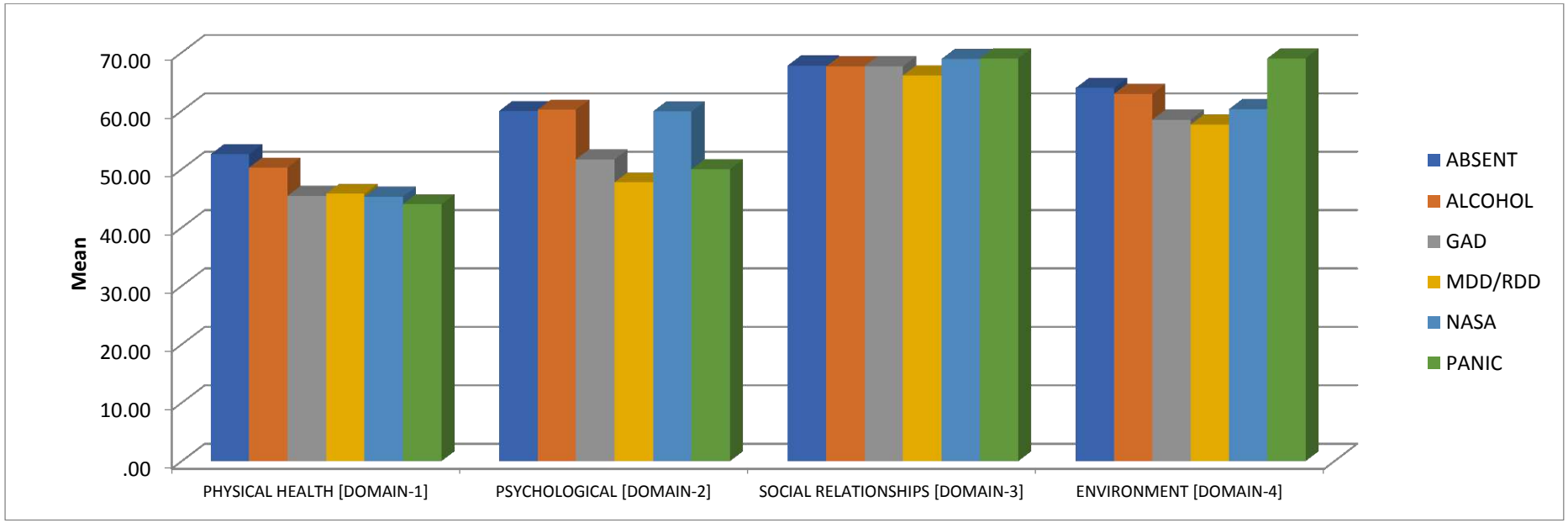

Table 27 and Figure 27 show the correlation of QOL of CHF patients with the presence of specific psychiatric comorbidities. The mean scores on all domains of the BREF scale for CHF patients with no co-existing Psychiatric illness were 52.56, 59.97, 67.77, and 63.92 respectively, and for Alcohol use disorder, GAD, MDD/RDD and Non-alcohol Substance Abuse (NASA) were- (50.27, 60.18, 67.64, 62.91), (45.44, 51.68, 67.64, 58.48), (45.79, 47.44, 66.08, 57.66), and (45.30, 59.90, 68.90, 60.30) respectively. Per our analysis, we found that QOL scores broadly decreased in the presence of psychiatric comorbidity, with statistically significant differences seen in the Physical, Psychological, and Environmental domains of the WHO-QOL BREF scale, with p-values <0.05.

TABLE-28a-RELATION OF QOL OF CHF PATIENTS WITH IPD/OPD STATUS OF CHF PATIENTS

	IPD/ OPD	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	I	143	47.99	8.583	.718	-4.833	0.001
	O	57	54.51	8.665	1.148		
PSYCHOLOGICAL [DOMAIN-2]	I	143	54.69	8.82	.74	-4.916	0.001
	O	57	61.28	7.85	1.04		
SOCIAL RELATIONSHIPS [DOMAIN-3]	I	143	68.20	6.006	.502	2.457	0.015
	O	57	65.70	7.550	1.000		
ENVIRONMENT [DOMAIN-4]	I	143	60.38	7.14	.60	-5.035	0.001
	O	57	65.49	4.36	.58		

FIGURE-28a-RELATION OF QOL OF CHF PATIENTS WITH IPD/OPD STATUS OF CHF PATIENTS

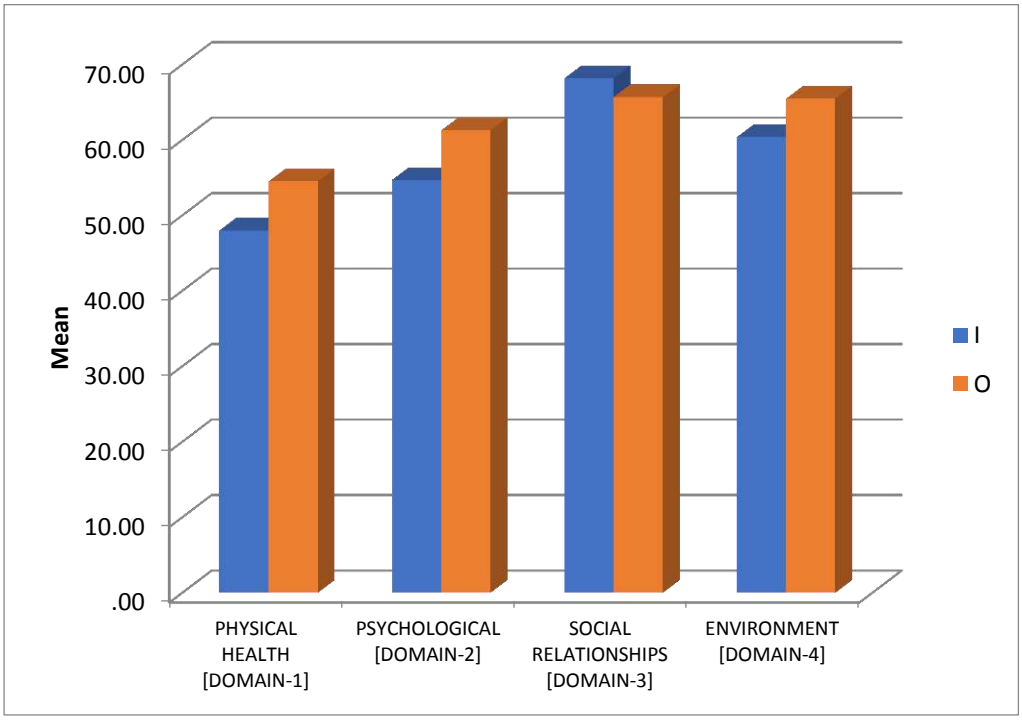

TABLE-28b-RELATION OF QOL OF CHF PATIENTS WITH IPD/OPD STATUS OF CHF PATIENTS (ONLY NYHA-II/III)

	IPD/OPD [NYHA-II, NYHA-III]	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
PHYSICAL HEALTH [DOMAIN-1]	I	98	50.43	8.787	.888	-2.028	0.044
	O	46	53.61	8.739	1.289		
PSYCHOLOGICAL [DOMAIN-2]	I	98	55.06	9.142	.924	-3.822	0.001
	O	46	61.00	7.639	1.126		
SOCIAL RELATIONSHIPS [DOMAIN-3]	I	98	68.19	6.329	.639	2.463	0.015
	O	46	65.24	7.469	1.101		
ENVIRONMENT [DOMAIN-4]	I	98	60.68	7.196	.727	-3.984	0.001
	O	46	65.30	4.613	.680		

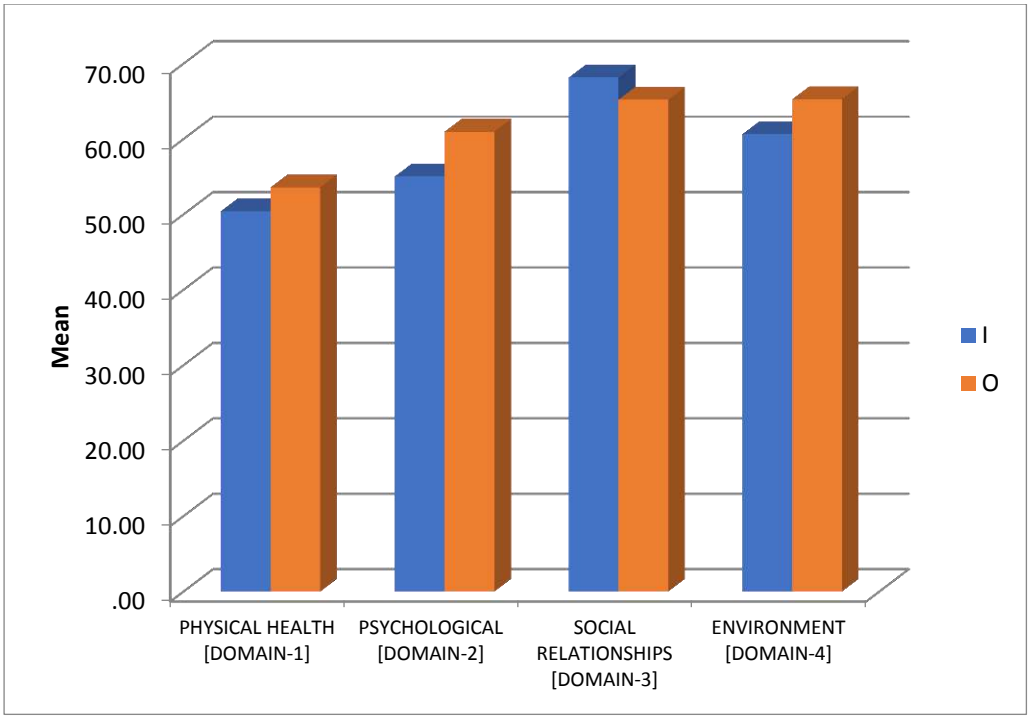

FIGURE-28b-RELATION OF QOL OF CHF PATIENTS WITH IPD/OPD STATUS OF CHF PATIENTS (ONLY NYHA-II/III)

Table 28a and Figure 28a show the relation of QOL of CHF patients with the OPD/IPD status of CHF patients. The mean scores on all domains of the BREF scale showed a statistically significant decrease in IPD patients with p-value <0.05. Hence, we found that QOL among the in-patients was worse than out-patients. As the NYHA-I patients were uncommon in the IPD and NYHA-IV were uncommon in the OPD, we also computed the relation between QOL and OPD/IPD status of CHF patients -taking only NYHA-II and NYHA-III CHF patients, in Table 28b and figure 28b. Here also, we found a statistically significant inference that QOL in OPD patients with NYHA-II/NYHA-III symptoms of CHF was better than that of IPD patients of CHF in NYHA-II/NYHA-III severity class, p-value <0.05.

DISCUSSION

Definition:

Congestive heart failure (CHF) is a complex clinical illness that arises from any impairment in the cardiac anatomy or the physiology of ventricular filling or blood ejection. It significantly reduces quality of life, increases healthcare costs, and diminishes functional ability. In addition to psychological illnesses being more commonly co-occurring in HF patients, anxiety and depression can also be difficult to diagnose in these patients due to the overlap in the symptomatology of these psychiatric disorders and HF. The severity and prevalence of psychiatric illness also change with the severity of HF. Finally, psychiatric illness increases HF mortality and morbidity rates. These changes brought about by HF include experiencing the symptoms of HF, modifications in the patient's lifestyle, and an increase in stress.

Patient demographic data:

Distribution of CHF patients concerning age:

In this study, 200 CHF patients participated. The average age of the study's patients was 62.08 ±11.44 years, and the bulk of them belonged to the 45–74 age range, with 33.5% falling into the 45–59 age group and 45% into the 60–74 age group. Since CHF is a chronic illness, the majority of the patients in our research were elderly. Additionally, all NYHA classes with CHF patients were included in our study.

The age distribution of the CHF patients in our study was consistent with a study by Huffman et al., which found that since the lifetime risk of heart failure rises with age, the burden of heart failure also rises with aging populations. According to this study, heart failure is primarily a disease of the elderly. [41]

Furthermore, according to S. Reddy et al., the prevalence of heart failure rises with age, from less than 1% in the 20–39 age range to over 20% in those 80 years of age or older.[42] According to a different study by Arend Mosterd et al., patients with heart failure in general practice are typically 77 years old. The incidence of heart failure surged in the

Hillingdon study from 0.2/1000 person-years in the 45–55 age group to 12.4/1000 person-years in the 85+ age group. The incidence increased from 2.5/1000 person-years (aged 55–64) to 44/1000 person-years (aged 85 or beyond) in the Rotterdam research. [43]

Congestive heart failure occurred in 652 patients out of 9,405 participants, according to Ho KK, Pinsky JL, et al. When heart failure was diagnosed, the average age was 70.0 ±10.8 years. Congestive heart failure also became much more common as people aged. In men aged 80 to 89, the annual incidence climbed from 3 cases/l,000 to 27 cases/l,000. The increase occurred in men aged 50 to 59.[44] Anh L. Bui, Tamara B. Horwich, et al. state that the prevalence of CHF escalated with age in cohort studies like the Rochester Epidemiologic Project in Olmsted County, rising to 8.4% in those over 75 compared to 0.7% in those between 45 and 54.[45]

Additionally, as demonstrated by Epidemiology of Heart Failure and Learning—EPICA, a Portuguese study found that the prevalence of heart failure (HF) was 1.36 percent in the 25–49 age group, 2.93 percent in the 50–59 age group, 7.63 percent in the 60–69 age group, 12.67 percent in the 70–79 age group, and 16.14 percent in patients over the age of 80. As a result, the prevalence of HF grew dramatically with age.[46]

Gender Distribution of CHF Patients:

In our study, of all 200 patients with CHF, 63% (N=126) were males and 37% (N=74) were females.

This demographic distribution is comparable to research by Jan Mårtensson et al. and Anna Strömberg, which found that when men and women are compared, men have a higher incidence of heart failure across all age categories.[47] Furthermore, data from the Framingham research show that the incidence is one-third lower in women than in men and that men are more likely than women to have heart failure among patients under the age of 80.[48]

Furthermore, significant data from 31 trials comprising 41,949 patients were recently published by the Meta-Analysis Global Group in Chronic

Heart Failure (MAGIC) group; of these, only 33% of patients were female. [49]

Distribution of CHF patients as per literacy:

Of the participants in our study, 26% were illiterate and 74% were literate. Since the degree of literacy among CHF patients is a significant parameter, we examined this demographic. Although the precise relationship between literacy and health is still unknown, Marcus EN. Et al. found that persons with low literacy were more likely than those with good literacy to report having poor health and heart failure.[50]

Joanne Schwartz Berg, the American Medical Association's head of aging and community health and the publisher of a health literacy textbook, claims that patients with reading difficulties may steer clear of outpatient clinics and doctor's offices out of fear of the paperwork. [50] In another study by Reza Negarandeh and Ali Aghajanloo, the participants who were illiterate and lacked self-care knowledge were also poorly informed about the causes of heart failure (HF), the medications they were taking, the significance of daily weight monitoring, limiting fluid intake, engaging in regular physical activity, and following dietary plans.[51]

Furthermore, Low literacy was linked to worse outcomes (hospitalization for HF exacerbation) among 192 HF patients in a study by Wu JR, Holmes GM, et al. HF-related hospitalizations were less common in patients with adequate literacy than in patients with inadequate literacy (IRR = 0.34).[52] The incapacity to read medication labels was linked to clinical decompensation and health care utilization among patients with heart failure, according to a study by Pamela N. Peterson, Susan M. Shetterly, MS et al.[53]

Distribution of CHF patients according to marital status:

In this study, among the 200 patients with CHF, 82% (N=164) were married and 18% (N=36) were either unmarried or widow or widower.

Another study by ML Chung, TA Lennie, et al. used a dichotomization of this variable into groups of married and single people. Patients who were single, widowed, or divorced made up the unmarried group.[54]

According to Chung ML, Lennie TA, et al., having a spouse is frequently a sign of having the highest level of social support possible, and social support is a significant predictor of survival for people with coronary heart disease (CHD). For this reason, the demographic mentioned above is relevant to patients with CHF. Additionally, a high level of social support is linked to a better quality of life9,10, whereas a low level or non-existent social support is linked to a higher risk of readmission and death in HF patients.[54]

In research that Chin and Goldman did, following 257 HF hospitalized patients, it was discovered that single patients had a 2.1-fold increased risk of readmission or mortality within 60 days when compared to married patients.[55]

In research done by Terry A. Lennie, Jia-Rong Wu, and colleagues Finding the best possible outcomes for heart failure requires strict adherence to treatment regimens. Since the majority of HF patients are elderly and have mobility restrictions, they frequently need help taking their medications as directed. Thus, patients with HF frequently struggle to get help for these needs if they do not have a spouse or other significant relationship. Additionally, in patients with HF, medication adherence and marital status independently predict event-free survival.[56]

Marital quality has a positive impact on clinical outcomes in chronic heart failure, according to a study by Wouterson J.[57] A 4-year follow-up of patients with severe chronic heart failure was carried out by Coyne and associates suggesting that 4-year survival was independently predicted by the quality of the marriage. The same cohort was tracked for eight years by Rohrbaugh and colleagues who discovered that marital quality predicted an eight-year survival.[58,59]

Distribution of CHF patients based on type of CHF:

We have classified the 200 CHF patients who were enrolled in our study based on their phenotype. Of these patients, 63.5% had HFrEF-CHF, 11.5% had HFmrEF, and 25% had HFpEF-CHF. The proportion of patients with HFrEF, HFpEF, and HFmrEF was 62%, 24%, and 14%, respectively, in 3580 newly diagnosed patients with HF (mean age 68 years) from university hospitals in Catalonia, Spain, according to a prospective observational study by Escobar C, Palacios B, et al.[60] Our results were consistent with this study.

In another study, by Doryska A, Rywik TM, et al. A total of 2601 patients were included between January 2014 and May 2019; 1608 patients (62%) had HFrEF, 331 patients (13%) had HFmrEF, and 662 patients (25%) had HFpEF.[61] 56% of patients had HFrEF, 21% HFmrEF, and 23% HFpEF, according to the Swedish HF registry. In a different study, over half of the patients (about 50%) had HFrEF, around 40% had HFpEF, and 4% had HFmrEF, according to a large sample of participants, representative of the Spanish community, done by Escobar C, Palacios B, Varela L, et al.[60]

In a different study conducted by Frank P. Brouwers, Rudolf A. de Boer, et al., 374 people (4.4%) were diagnosed with new-onset heart failure over a median follow-up of 11.5 years (range 10.8–11.9), of which 125 (34%) were categorized as HFpEF and 241 (66%) as HFrEF.[62]

Effect of severity of CHF:

Regarding our study, out of all the CHF patients who were enrolled, 6% had NYHA-I symptoms, 31% had NYHA-II symptoms, 41% had NYHA-III class symptoms, and 22% had NYHA-IV class symptoms. Since the severity of HF in patients affects the quality of life and the incidence of psychiatric comorbidities—two outcomes that we are examining in this study—we had to categorize the CHF patients according to their severity (NYHA) based on a review of the worldwide literature.

Patients with stable congestive heart failure (NYHA class I–III) were included in a study by J. Juenger, D. Schellberg, et al. that assessed health-related quality of life in congestive heart failure patients.[35]

Among the patients included in another study by Calvert MJ, Freemantle N, et al. that assessed the effect of chronic heart failure on health-related quality of life, 763 (94%) were classified as NYHA class III patients, and the remaining 50 (6%) as class IV patients.[63] Patients with heart failure were included in a different study by Liguori I, Russo G, et al., where the patients' NYHA severity was used to classify their condition.[23]

Heart failure patients in the NYHA-I and NYHA-II categories were included in a study by Jain M, Agarwal M, Pradhan A, et al. that assessed psychiatric comorbidities, quality of life, and cardiovascular risk factors in patients with heart failure.

Consequently, it was found that NYHA severity was a significant predictor of both the QOL and the existence of psychiatric comorbidities.[2]

Distribution as per the duration of CHF:

We found that in our study 65.5% of patients were diagnosed with CHF within the last 5 years, 23.5% of patients knew about their CHF status for 5-10 years and 11% of patients were diagnosed ≥11 years back. Hence the majority of our study population had CHF diagnosed within the last 5 years, which by a study by Jain M, Agarwal M, et al, which included CHF patients and divided them into three groups, such that, the total duration of illness in the patients in Group A was 3.88 ± 3.73 years, in Group B was 3.38 ± 4.53 years, and in Group C was 1.30 ± 1.26 years.[2]

Gender and Phenotype of CHF:

Of the 50 HFpEF individuals in our study, 46% were male and 54% were female. In terms of HFmrEF, out of 23 instances, 30.4% were female and 69.6% were male; similarly, out of 127 HFrEF cases, 31.5% were female and 68.5% were male. In this case, Vera Regitz-Zagrosek's study on Sex and Gender Differences in Heart Failure, which we discovered while searching the international literature, revealed that women with HF have a higher EF and a stiffer, smaller

left ventricle than men. Women are more likely to have HFpEF than men, while men are more likely to have HFrEF, possibly due to the higher stiffness of women's hearts due to increased fibrosis in old age.[64]

Additionally, Cleland published data from a cross-sectional European survey, which showed that women were hospitalized with HFpEF more frequently and males were hospitalized more for HFrEF. [63]

The findings of a different study by Mauro Gori, Carolyn S. P. Lam, and Deepak K. Gupta revealed that the clinical differences between men and women described in PARAMOUNT paralleled those previously observed in other HFpEF studies, with women predominating over men in carrying the burden of HFpEF compared with HFrEF.[65] It was found that heart failure with preserved ejection fraction (HFpEF) affects more women than men, according to research published in another journal on gender differences in HFpEF pathophysiology by Anna L. Beale, Shane Nanayakkara, et al.[66]

Similarly, a study by Anjan Tibrewala MD, and Clyde W. Yancy MD, revealed that HFpEF is the most common form of HF in women and is associated with adverse clinical outcomes.[67]

Psychiatric comorbidities in CHF:

In our study, when screened with M.I.N.I, out of 200 patients enrolled 42.5% (N=85) patients had psychiatric disorders, with major depression in 19% of the CHF patients, GAD in 12.5% of patients, Alcohol Use in 5.5% and Non-Alcohol Substance Abuse seen in 5%, and panic disorder seen in 0.5% of the study population. Therefore, as per our study Depressive illness and anxiety disorders were the two most common psychiatric comorbidities in CHF patients.

While studying the global literature we found that there is a variation in the prevalence of respective psychiatric comorbidities in CHF patients but one aspect that we found to be constant was that in most of these studies among the most common psychiatric comorbidities in CHF patients were the Depressive Illness and Anxiety Disorders.

Our findings were consistent with research by Eva R. Serber, John F. Todaro, and colleagues, who found that the prevalence of anxiety disorders in CHD patients ranged from 10% to 29% and depression in patients ranged from 16% to 25%.[68] According to a study by Saif S. Rathore, Yongfei Wang, et al., patients with mental illness diagnoses made up 17.0% of the study cohort. The most frequently reported mental illnesses were depressive disorder (ICD-9-CM 311), neurotic disorder (ICD-9-CM 300), and non-dependent drug abuse (ICD-9-CM 305); the majority of other mental illness diagnoses were only occasionally recorded.[69]

The mean prevalence rate of clinically severe depression among CHF patients was found to be 21.5% in a meta-analysis encompassing 27 studies. According to a study by Sbolli M, Fiuzat M, et al., there is a larger chance of depression in individuals with heart failure. Additionally, two sizable meta-analyses discovered that the estimated 20% to 30% general prevalence of depression in HF. [7]

In another study on depression and anxiety in heart failure, published by Christopher M. Celano, M.D., 1, Ana C. Villegas, M.D., et al., it was discovered that 21.5% of HF patients have clinically significant depressive symptoms based on a meta-analysis of 36 papers. Anxiety is also very common in this group of people; almost 13% of HF patients meet the diagnostic criteria for a formal anxiety disorder.[27]

Per a similar study conducted by Jain M, Agarwal M, et al, the prevalence of psychiatric illnesses among HF patients was 25.7%, of which 14.29% had a depressive disorder, hence here also depressive illness was the most common psychiatric comorbidity in HF patients.[2]

Psychiatric comorbidities and gender of CHF patients:

In our study, we found that 61.2% of patients with psychiatric comorbidities were males and 38.8% of patients were females, but the results were not significant, p-value>0.05.

After looking throughout the body of research, we discovered that the three groups the researchers examined in a study by JAIN, MOHIT; AGARWAL, MANU; et al. had the same sex ratio. Psychiatric disorders

are more prevalent in female patients with HF, according to certain research.[2] The male-to-female ratio among patients with HF who have psychiatric disorders is not different from that of patients without it, according to numerous research conducted worldwide.[2]

Psychiatric comorbidities and age of CHF patients:

We found that 45.9% of the CHF patients who had psychiatric comorbidities were in the age group 60-74 years, with 27.1% of the patients in the age group 45-59 years, and 22.4% and 4.7% of the CHF patients in ≥75-year age group and ≤44-year age group respectively. The above relation was not statistically significant, p-value >0.05.

Our findings were consistent with a different study by JAIN, MOHIT; AGARWAL, MANU; et al., which found that there were no appreciable differences in age between the three groups they included in their investigation of cardiovascular risk factors, quality of life, and psychiatric comorbidities in heart failure patients. The majority of the patients in the three categories were elderly.[2] Research by Wei Jiang, MD; Jude Alexander, et al.[12]; Cully JA, Phillips LL, et al.[14]; O'Connor CM, Joynt KE[70]; and Haworth JE, Moniz-Cook E, et al.[71], among others, demonstrate that age is not a factor in the etiology of mental illness in HF patients. Older patients tend to classify emotional symptoms like melancholy, shame or worthlessness, worry, and fear incorrectly, thus it becomes hard for physicians to diagnose psychiatric illness.[72] So, clinical judgment should be used by clinicians while assessing psychiatric illness and QOL in the older population.

Psychiatric comorbidity and Severity of CHF:

Of all the CHF patients enrolled in our study, 85 patients had psychiatric comorbidities (as screened by M.I.N.I). 1.2% of the patients had NYHA-I symptoms, 7.1% of patients had NYHA-II symptoms, 56.5% of the patients were in NYHA-III class of CHF and 35.3% of the patients had NYHA-IV symptoms. Therefore, according to our study, the prevalence of psychiatric comorbidities varies with NYHA severity of CHF, such that the prevalence increases with worsening NYHA severity (p-value<0.001), hence significant correlation exists.

The results of a study by Kenneth E. Freedland et al. on the prevalence of depression in hospitalized patients were consistent with our findings, indicating that there were significant differences in the prevalence of major depression between strata based on factors such as age, gender, functional severity of heart failure, employment status, dependence on daily activities, and history of major depression.[73] Here, the prevalence varied from 8% for patients with class I failure according to the New York Heart Association to 40% for individuals in class IV.

The above conclusion is consistent with a study by Etem Celik,1 Serkan Cay et al., which found that the severity of depression and the NYHA functional class had a strong positive connection ($p < 0.001$), with the correlation increasing with the severity of the HF symptom class.[74] While looking through the international literature, we came across a different study whose findings aligned with ours in the aforementioned area. A study by Haworth JE, Moniz-Cook E, et al. stated that a diagnosis of a mood disorder, such as anxiety or depression, was linked to a significantly worse functional status (NYHA Class).[71]

Another study that correlates with ours in this aspect was done by Azevodo et al. which showed that there was a direct correlation between symptoms of depression and HF stages in women, on the other hand, in men, only stage C was associated with a higher score.[75]

Psychiatric comorbidities and type of CHF:

As per our study, concerning the phenotype of CHF, of all 85 CHF patients with psychiatric comorbidities, 68.2% had HFrEF phenotype, 12.9% had HFmrEF and 18.8% had HFpEF phenotype. Hence, as far as the results of our study are concerned, HFrEF-CHF had a greater prevalence of psychiatric comorbidities than HFpEF-CHF and HFmrEF-CHF, but the above result was not statistically significant.

Contradictory findings were found in previous investigations comparing the prevalence of depression between HFrEF and HFpEF. There was

no discernible difference in the prevalence of heart failure with mid-range ejection fraction (32%), HFrEF (31%), and HFpEF (36%), among 1404 patients in the research. [86] A noteworthy pattern of increased depression prevalence was noted in 233 HF patients in another study, which included HFpEF (20%), heart failure with mid-range ejection fraction (33%), and HFrEF (35%).[76] Comparing HFpEF with HFrEF, two smaller investigations (n = 105 for one; n = 202 for the other) did not find any significant variations in prevalence (25% versus 24%, respectively). [76]

According to Vu K, Claggett BL, John JE, et al.'s community-based study on 5086 older adults followed up for more than five years, persons with HFpEF were more likely to experience severe depressive symptoms than people without HFrEF, but not vice versa. Additionally, incident HFpEF was linked to higher severity depressive symptoms but not incident HFrEF. Here, the data show that HFpEF participants had a higher prevalence of depression than HFrEF participants, but not HFpEF. [76] According to a study by Jenny Nisser, Tarek Bekfani, and colleagues, patients with HFpEF appeared to be more depressed than those with HFrEF.[77]

Psychiatric comorbidities and Duration of CHF:

Per our study, 69.4% of patients who had psychiatric comorbidities were diagnosed with CHF within the last 5 years, 15.3% of patients were diagnosed 5-10 years back and another 15.3% of patients knew about the CHF status ≥11 years back. When we screened through the available literature, we found that a similar correlation was not evaluated by previous studies. We hypothesize that these CHF patients who were diagnosed and have been living with CHF for the last 5 years did not adapt to the new dynamics of their lives which was brought on by the presence of CHF, its medications, and other related factors. Hence, there was also an associated psychological stressor present in them.

Prevalence of psychiatric comorbidities in OPD vs IPD patients:

First, we found that 90.6% of CHF patients who had co-existing psychiatric illnesses, were admitted to our hospital, and the remaining 9.4% presented in OPD. As we found in our study that NYHA-I class symptoms were uncommon in IPD patients and NYHA-IV symptoms were uncommon among OPD patients, we also compared the prevalence of psychiatric comorbidities in OPD and IPD patients who had either NYHA-II or NYHA-III symptoms only. We found that there is a significant correlation, such that, the majority of the patients with psychiatric comorbidities were admitted, i.e. IPD. As we looked for the prevailing literature in this regard, we did not find any studies that sought this correlation.

CHF and QOL:

In our study when we evaluated the quality of life in patients with CHF, we found that patients with CHF had low scores in all 4 domains of QOL, as per the WHO-QOL BREF questionnaire), hence as per our study, CHF patients had poor quality of life. Here we have used the WHO-QOL BREF questionnaire to evaluate the QOL of CHF patients, although there are various other scales to measure the same, this finding remains consistent.

According to a study by J Juenger, D Schellberg, et al., the congestive heart failure group had a global decline in quality of life across all SF-36 scales when compared to the general healthy population.[35] Another study conducted by Charles M. J. Cline, Ronnie B. Willenheimer, et al. found that patients with congestive heart failure appeared to have health-related issues in practically every area when compared to a normal, reference group of the same age and sex. [78]

A study by Calvert MJ, Freemantle N, et al. demonstrated that heart failure causes declines in each of the five EQ-5D measures of health status. [63] A study by Craig D. Blinderman MD, MA a b, Peter Homel PhD, et al. validated our findings as well, stating that people with advanced CHF had a moderately impaired overall quality of life.[79]

Correlates of QOL in patients with CHF:

QOL and Severity of CHF:

Patients with NYHA-III and IV severity classes of CHF scored lower on the WHO-QOL BREF questionnaire than CHF patients in the NYHA-I class, indicating that QOL among CHF patients varied according to the NYHA severity class of CHF. At p-value<0.05, this association was statistically significant. This result was observed in agreement with another study on the quality of life of patients with chronic heart failure, carried out by Costa LL, Islam MS, et al. The study revealed that low QOL was linked to participants' NYHA heart failure functional classes III and IV, and it also correlates with the results of another Serbian study.

In a study assessing the quality of life in heart failure, Adebayo, Saheed O.; Olunuga, Taiwo O., et al. discovered that worsening HF severity is directly correlated with worse physical function, as evidenced by the SF-36's Physical Function domain and PCS. This suggests that HF severity is a separate factor contributing to lower HRQoL.[80] It was discovered that there is a high correlation between HRQoL and the severity of HF symptoms, even in this study by Saccomann IC, Cintra FA, et al. Patients typically report intolerance to physical activity as the disease advances.[81]

Juenger et al. also discovered that QOL drops ($P < 0.001$) as the NYHA functional class deteriorates. [35] Poor QoL in CHF patients is linked to greater NYHA class, low socioeconomic position, and a lack of informal caregivers, according to a study by Javaid Iqbal, Loraine Francis, et al.[36]

QOL and Age of CHF patients:

In our study, we found that QOL declined with increasing age in CHF patients, especially in the Physical and Psychological domains, and this correlation was significant with a p-value<0.05

Our findings were found to be consistent with the research by Seongkum Heo, RN a, Debra K. Moser, et al., which indicated that older persons with heart failure had significantly lower HRQOL than

older adults in good health. It was because heart failure in older persons was associated with worse health perceptions, reduced functional status, and more severe emotional and physical symptoms.[82] According to Ventures I, Kamperidis V, et al., the Asian sudden cardiac death in heart failure (ASIAN-HF) trial revealed that younger patients had higher HRQOL (based on KCCQ scores) than older patients. The trial examined age-related differences in 1203 patients with HFpEF from 11 Asian countries.[83]

Moreover, a different study conducted in a primary care context on 542 HF patients older than 60 years revealed that, in addition to other risk variables, greater age was linked to a lower HRQoL.[84] According to research by Susan Hales d, Nelson Wang a, b, et al., worse HRQoL in HF patients over 65 years of age was independently predicted by greater NYHA class, lower income, and longer duration of HF [84]. Patients in the oldest group had lower HRQOL than those in the youngest group, according to another study.[84]

QOL and gender of CHF patients:

We found in our study that WHO-QOL BREF scores in Physical, Psychological, and Environmental Domains showed a statistically significant gender variation in CHF patients, such that males scored higher than females in the above 2 domains, p-value<0.05. However, a significant gender variation was not found in the Social Relationships domain of WHO-QOL BREF.

A study by Jingxuan L, Lu Z, Xuesi W, et al. may support our findings that female CHF patients have a lower quality of life than their male counterparts. The study found that the female patients in the cohort were older on average, had worse heart function, higher levels of NT-proBNP, and a significant difference in QoL. [85] Additionally, women were found to have more severe peripheral edema and a lower quality of life due to gradually worsening symptoms, such as dyspnea both at rest and during exertion, in a secondary analysis of the CHARM study.[86]

Women's baseline Quality of Life (QoL) scores were considerably poorer than men's, according to the Kansas City Cardiomyopathy

Questionnaire (KCCQ) and Functional Assessment of Chronic Illness Therapy-Palliative Care Scale (FACIT-Pal) [87]. This was observed in The PAL-HF research. According to results from another study, women with HF in China had a lower quality of life than males.[85] Furthermore, several earlier studies have demonstrated that women continue to have a lower quality of life and are more likely than males to have heart failure symptoms even with appropriate pharmaceutical therapy.[79]

QOL and marital status of CHF patients:

As we were comparing QOL in CHF patients based on their marital status, we found that married CHF patients had better QOL as compared to others (i.e., unmarried, widow, widower) in both the Physical and Psychological domains. In our study, WHO-QOL scores were higher in married CHF patients, p-value<0.05.

Our results may be compared to those of a study by James C. Coyne, Michael J. Rohrbaugh, et al., which focused on the prognostic significance of marital functioning for CHF survivorship. Specifically, the study found that a comparatively healthy marriage appeared to have an equal impact on survival as less severe CHF symptoms. [58]

In a different study by Marie Louise Luttik, Tiny Jaarsma, which examined the relationship between patients' clinical outcomes, quality of life, and marital status in heart failure patients, it was found that in addition to other risk factors, persons with heart failure who live alone (without a spouse or caregiver) run the risk of having a worse quality of life.[88] In contrast to patients who had a caregiver, those without an informal caregiver (such as a spouse) had a lower quality of life, according to a study by Javaid Iqbal, Loraine Francis, et al.[36] Besides the aforementioned, it has been demonstrated in earlier research that the quality of life (QoL) of patients with congestive heart failure (CHF) who are married is superior to that of CHF patients who live alone. [88]

QOL and literacy in CHF patients:

When we evaluated the correlation between the literacy in CHF patients and their QOL, we did not find a statistically significant difference between the literate and the illiterate patients. We hypothesize that it was because our study population had a majority, i.e., approximately 3/4th of the patients who were literate which could have skewed our findings.

Reza Negarandeh et al. discovered, however, that nearly all participants identified a main barrier to self-care as a lack of information about self-care, which was a result of their poor educational level. Moreover, one of the main factors influencing QOL in HF patients is self-care.[51] Jia-Rong Wu, George M. Holmes, et al. demonstrated that among 192 individuals with HF, which had an impact on their quality of life, low literacy was linked to worse outcomes (i.e., hospitalization for HF exacerbation). Patients with sufficient literacy had a lower hospitalization rate due to HF than patients with inadequate literacy (IRR = 0.34).[52] According to research by Pamela N. Peterson et al., people with heart failure who are unable to read prescription labels have lower healthcare consumption and clinical decompensation, which negatively impacts the QOL.[53]

QOL and relation with the presence of a psychiatric comorbidity:

Importantly, we found that QOL was negatively impacted in the presence of a co-existing psychiatric illness in patients with CHF, i.e., the presence of a psychiatric comorbidity was associated with a poor QOL in CHF patients in Physical, Psychological, and Environmental domains of WHO-QOL BREF, p-value<0.05.

The findings of a study by Lee et al., which indicated that psychological state was the main factor linked to CHF and that high levels of anxiety and/or depression would have more detrimental impacts on HRQoL in CHF patients, sufficiently supported the previous results.[89] According to research by Ahmad Alzahrani, Abdullah Alqahtani1, et al., cardiac patients with psychiatric illnesses performed worse on the WHOQOL categories than patients without psychiatric disorders, especially in the psychological health domain.[90] According to Michael Weiss et al. [91],

heart patients' HRQOL was adversely impacted by anxiety, despair, and a lack of social support. Additionally, it was discovered that depression in CHF patients independently predicted deterioration of QOL, symptoms of heart failure, and social and physical functioning.[34]

According to a study by Saarni SI, Suvisaari J, et al., the most significant reductions in HRQoL were linked to the generally chronic diseases of dysthymia, agoraphobia, generalized anxiety disorder, and social phobia.[92] Furthermore, psychological illnesses were found to influence the quality of life (QOL) in a study by JAIN, MOHIT; AGARWAL, MANU; et al. This suggests that emotions in patients with heart failure may impact their experience of QOL.[2] Uchmanowicz I, et al. discovered that patients with HF frequently exhibit signs of cognitive impairment and depression, which impair QoL and interfere with treatment compliance.[93]

Researchers Rebecca L. Dekker, Terry A. Lennie, et al. discovered that depressive symptoms are an independent predictor of HRQOL and that patients with heart failure (HF) who either do not experience depressive symptoms at all or whose symptoms improve have significantly higher HRQOL at a year later than those who do.[94]

According to a study by Ilaria Liguori, Gennaro Russo, et al., depression often makes CHF worse, which in turn makes quality of life poorer.[23]

The impact of alcohol use disorders generally appears smaller (Ormel et al, 1994; Bijl & Ravelli, 2000; Alonso et al, 2004 b; Sareen; Sareen et al, 2005).[95-98]

QOL and type of CHF:

When we compared the QOL in CHF patients based on the type of CHF i.e. HFrEF, HFmrEF, and HFpEF, we did not find any significant correlation in any of the WHO-QOL BREF domains.

According to Dian Hudiyawatia et al., patients with HFpEF experience a higher quality of life than those with HFrEF.[99]

Additionally, patients with HFpEF had a higher quality of life than those with HFrEF, according to Chen et al. [100]

In contrast to the previously cited research, several studies have found that patients' HRQOL is lower in those with HFpEF rather than HFrEF. Researchers Muthiah Vaduganathan, Alvin Chandra, et al. demonstrated that patients with HFpEF had worse HRQL than patients with HFrEF in almost every domain and social and physical activity.[101] HRQOL was lower in patients with HFpEF but did not differ between patients with HFrEF and HFmrEF, according to research that retrospectively examined patient data by stratifying them into several EF ranges.[102]

In the same way, patients with HFmrEF had the highest HRQOL (as evaluated by EQ-VAS) according to the Swedish Heart Failure Registry, while patients with HFpEF had the lowest HRQOL, followed by patients with HFrEF.[103]

Another study that looked at 3499 HF patients' HRQOL discovered that patients with HFpEF had a lower overall HRQOL than patients with HFrEF and HFmrEF.

As a result, we were unable to determine which kind of CHF had a higher quality of life.

QOL and OPD vs IPD status of CHF patients:

When we studied the correlation between QOL and OPD vs IPD status of CHF patients we found that the QOL of CHF patients who presented in the OPD was better in all 4 domains of the WHO-QOL BREF scale than the IPD patients and this difference was statistically significant with p-value <0.05. While screening through the global literature we did not find much database evaluating the above correlation. We hypothesize that in-patients with CHF had increased levels of stress, more severe NYHA class, and decreased social interaction as compared to the out-patients, hence the reason for worse QOL.

SUMMARY AND CONCLUSION

Congestive heart failure (CHF) is a complex clinical condition that results from any anatomical or functional impairment of ventricular filling or blood ejection. A higher stress level and physiological (neurohormonal) changes are two of the many changes brought on by heart failure (HF), which can also impact the quality of life (QOL) by increasing the chance of developing psychiatric disorders.

This study was conducted in 200 patients with CHF and the prevalence of psychiatric comorbidities and the impact on quality of life was assessed. The data thus obtained was analyzed and we reached the following conclusions:

- Majority of the CHF patients were in the age group of 60-74 years (45%), males (63%), married (82%), literate (74%) and were in-patients (71.5%).
- 63.5% of the CHF patients who were enrolled in our study had HFrEF-CHF, 11.5% had HFmrEF and 25% had HFpEF phenotype of CHF.
- Of all the CHF patients, 6% had NYHA-I symptoms, 31% were in NYHA-II severity class, 41% had NYHA-III CHF and 22% had NYHA-IV severity of CHF.
- Majority, i.e., 65.5% of our study population were newly diagnosed cases of CHF.
- 42.5% of the patients with CHF were found to have psychiatric comorbidity.
- Prevalence of specific psychiatric comorbidities was: 19% of CHF patients in our study population had MDD/RDD, 12.5% had GAD, alcohol use/ dependence was seen in 5.5% patients, 5.0% of patients had Non-Alcohol Substance Abuse, with panic disorder seen in 0.5% of the patients. Hence, depressive illness and anxiety were the most prevalent psychiatric comorbidities in our study.

- Per our study, HFpEF-CHF was more common in females (54%) and HFrEF-CHF was more common in male CHF patients (68.5%).
- Psychiatric comorbidities were more common in the more severe NYHA class of CHF, 56.5% in NYHA-III and 35.3% in NYHA-IV. Also, the prevalence of specific psychiatric comorbidities increased with worsening NYHA severity class of CHF.
- Psychiatric comorbidities were more common in recently diagnosed CHF patients.
- Co-existing psychiatric illness was more common in IPD patients with CHF.
- There was no gender variation in the prevalence of psychiatric comorbidities.
- There was no variation in the prevalence of psychiatric comorbidities concerning the phenotype of CHF.
- All patients with CHF were found to have low scores in all 4 domains of QoL (as per the WHO-QOL BREF questionnaire), hence CHF patients had poor Quality of Life.
- QoL worsened with increasing NYHA severity of CHF, such that, NYHA-III and NYHA-IV patients had worse QoL than NYHA-I and NYHA-II patients.
- QOL in its physical and psychological domains worsened with increasing age in CHF patients.
- The physical, psychological, and environmental domains of QOL showed worse status in female patients of CHF.
- CHF patients who were married showed better QOL in physical and psychological than their unmarried/widow/widower counterparts.
- QoL was negatively impacted in the presence of co-existing psychiatric morbidity in CHF patients, i.e. presence of psychiatric comorbidity was associated with a poorer QoL in CHF patients.
- QOL of in-patients with CHF was worse than that of out-patients.

CONCLUSION:

There is a significant association of psychiatric co-morbidities in CHF patients. The frequency of this association increases with the worsening NYHA class of CHF symptoms. The QOL further deteriorates in the presence of psychiatric co-morbidities in patients of all NYHA severity classes of CHF. There is no significant age or gender variation in the prevalence of co-existent psychiatric illness in patients living with CHF. As for QoL, in both females and the elderly, we found a better score in the Social-relationship domain of the WHOQOL-BREF scale than in males and younger study populations respectively. Physicians must be sensitized to the prevalence of psychiatric illness in CHF patients so that they can aim at improving the QoL of their patients.

LIMITATIONS

- Our study was conducted on a small sample of hospital-based CHF patients which is not representative of the total CHF population. This limits the generalization of the results on CHF patients.
- The QOL was self-reported and subjective rather than objective.
- The premorbid personality traits and coping skills were not assessed in our study which could have confounded the results.
- Our study did not take into account the presence of other chronic conditions like Type 2 Diabetes Mellitus, Hypertension, CVA, etc., which are prevalent in CHF patients, which could also have confounded the results.
- Our study did not assess the socio-economic status of the CHF patients because of the associated complexity in determining the same in the presence of health insurance for many of our study participants.

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Socio Demographic Proforma

PATIENT PROFILE S. NO.

NAME: AGE/SEX:

MRD NO:

OCCUPATION:

EDUCATION:

INCOME:

SOCIOECONOMIC CLASS:
(MODIFIED KUPPUSWAMY SCALE, 2022)

MARITAL STATUS:

DURATION OF CHRONIC HEART FAILURE:

GRADE/ SEVERITY (DATE ; NYHA, 2D-ECHO)

HISTORY OF SMOKING:

MONTHLY HOSPITAL EXPENSES:

ADDRESS:

CONTACT NO.:

PSYCHIATRIC CO-MORBIDITY IF ANY (ASSESSED BY M.I.N.I)

SCORE (WHOQOLBREF):

Signature of Candidate **Signature of Supervisor**

Mini Neuro-Psychiatric Interview

Patient Name MRD No:-

MODULES	TIME FRAME	MEETS CRITERIA	DSM-IV	ICD-10
A. MAJOR DEPRESIVE EPISODE	Current (past 2 weeks) Recurrent		296.20-296.26 Single 296.30-296.36 Recurrent	F32x F33x
MDE WITH MELANCHOLIC FEATURES	Current (2 weeks)		296.20-296.26 Single 296.30-296.36 Recurrent	F32x F33x
B. DYSTHYMIA	Current (Past 2 years)		300.4	F34.1
C. SUICIDALITY	Current (Past Month) Risk: Low Medium High			
D. MANIC EPISODE	Current Past		296.00-296.06	F30x-F31.9
HAYPOMANIC EPISODE	Current Past		296.80-296.89	F31.8-F31.9/F34.0
E. PANIC DISORDER	Current (Past Month) Lifetime		300.01/300.21	F40.01-F41.0
F. AGORAPHOBIA	Current		300.22	F40.00
G. SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)		300.23	F40.1
H. OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)		300.3	F42.8
I. POSTTRAUMATIC STRESS DISORDER Optional	Current (Past Month)		309.81	F43.1
J. ALCOHOL DEPENDENCE ALCOHOL ABUSE	Past 12 Months Past 12 Months		303.9 305.00	F10.2x F10.1
K. SUBSTANCE DEPENDENCE (Non-alcohol) SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months Past 12 Months		304.00-90/305.20-90 304.00-90/305.20-90	F11.1-F19.1 F11.1-F19.1
L. PSYCHOTIC DISORDERS	Lifetime Current		295.10-295.90/297.1/ 297.3/293.81/293.82/ 293.89/298.8/298.9	F20.xx-F29
MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime Current		296.24/296.34/296.4	F32.3/F33.3/ F30.2/f31.2/f31.5 F31.8/F31.9/F39
M. ANOREXIA NERVOSA	Current (Past 3 Months)		307.1	F50.0
N. BULIMIA NERVOSA	Current (Past 3 Months)		307.51	F50.2
ANOREXIA NERVOSA, BINGE EATING/ PURGING	Current		307.1	F50.0
O. GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)		300.02	F41.1
P. ANTISOCIAL PERSONALITY DISORDER Optional	Lifetime		301.7	F60.2

Signature of Candidate **Signature of Supervisor**

WHO Quality of Life BREF

Patient Proforma

Patient Name: - MRD No:-

	Equations for computing domain scores	Raw score	Transformed scores*	
Domain 1	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=	**4-20**	**0-100**
Domain 2	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		
Domain 3	Q20 + Q21 + Q22 ☐ + ☐ + ☐	=		
Domain 4	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		

Signature of Candidate **Signature of Supervisor**

NYHA HEART FAILURE GRADING

New York Heart Association (NYHA) Classification of Heart Failure

Class	Patient Symptoms
Class I (Mild)	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class II (Mild)	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class III (Moderate)	Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class IV (Severe)	Unable to carry out any physical activity without discomfort. Symptoms of fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea) are present at rest. If any physical activity is undertaken, discomfort increases.

Signature of Candidate **Signature of Supervisor**

MODIFIED KUPPUSWAMY SCALE

Education of head of family	Score
Profession or honours	7
Graduate or postgraduate	6
Intermediate or post high school diploma	5
High school certificate	4
Middle school certificate	3
Primary school certificate	2
Literate	1
Occupation of head of family	
Profession	10
Semi- profession	6
Clerical, Shop-owner	5
Skilled owner	4
Semi-skilled worker	3
Unskilled worker	2
Unemployed	1
Monthly income of family (2017)	
>41430	12
20715-41429	10
15536-20714	6
10357-15535	4
6214-10356	3
2092-6213	2
<2091	1

Socioeconomic status		Total Score
I	Upper	26-29
II	Upper Middle	16-25
III	Lower Middle	11-15
IV	Upper Lower	5-10
V	Lower	<5

Signature of Candidate **Signature of Supervisor**

S.No.	M.R.D. NO.	NAME	AGE (IN YEARS)	SEX	[literate [L]]	ILLITERATE[IL]	[MARRIED[m]	Others[o]	HFrEF	HFmrEF	HFpEF	SEVERITY OF CHF- [NYHA}	DURATION ≤5 YEARS	DURATION 5-10 YEARS	DURATION ≥ 11 YEARS
1	1774620	JR	48	M	YES	NO	YES	NO	NO	NO	YES	IV	YES	NO	NO
2	1744723	IV	73	F	YES	NO	NO	YES	YES	NO	NO	IV	YES	NO	NO
3	1775217	PK	48	F	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
4	1775240	VG	75	F	NO	YES	YES	NO	NO	NO	YES	IV	YES	NO	NO
5	1768342	C	45	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
6	1774031	H	50	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
7	1771601	M	41	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
8	1770974	G	64	M	NO	YES	YES	NO	NO	NO	YES	II	YES	NO	NO
9	1772719	K	51	M	YES	NO	YES	NO	YES	NO	NO	I	YES	NO	NO
10	1608631	B	58	F	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
11	1592311	R	68	F	NO	YES	NO	YES	YES	NO	NO	II	NO	YES	NO
12	1539318	K	56	F	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
13	196419	VV	56	F	YES	NO	YES	NO	NO	NO	YES	III	NO	YES	NO
14	1724672	OP	76	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
15	1773134	N	76	M	YES	NO	YES	NO	NO	YES	NO	II	YES	NO	NO
16	227657	K	59	M	YES	NO	YES	NO	YES	NO	NO	II	NO	NO	YES
17	377141	A	60	M	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
18	1758383	B	87	M	YES	NO	NO	YES	YES	NO	NO	III	NO	NO	YES
19	1445532	G	62	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
20	1701689	P	50	F	YES	NO	YES	NO	NO	YES	NO	III	YES	NO	NO
21	303746	P	63	F	YES	NO	YES	NO	YES	NO	NO	III	NO	NO	YES
22	1773172	U	48	F	YES	NO	NO	YES	YES	NO	NO	II	YES	NO	NO
23	1767135	B	62	M	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
24	1759778	R	69	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
25	205708	D	79	M	YES	NO	YES	NO	YES	NO	NO	III	NO	NO	YES
26	1156328	J	60	F	YES	NO	YES	NO	NO	NO	YES	III	NO	YES	NO
27	1624302	A	60	F	YES	NO	NO	YES	NO	NO	YES	III	YES	NO	NO
28	1759431	A	69	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
29	185128	N	60	M	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
30	1771041	K	40	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
31	1770197	J	48	M	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
32	3901	N	82	F	NO	YES	NO	YES	NO	NO	YES	II	YES	NO	NO
33	838282	G	73	F	NO	YES	NO	YES	NO	NO	YES	II	YES	NO	NO
34	1479284	S	75	F	NO	YES	NO	YES	YES	NO	NO	II	YES	NO	NO
35	1765935	S	57	M	YES	NO	YES	NO	NO	YES	NO	IV	YES	NO	NO
36	1761917	D	50	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
37	175792	T	69	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
38	1772568	N	61	F	YES	NO	NO	YES	YES	NO	NO	III	YES	NO	NO
39	1774957	L	50	F	YES	NO	YES	NO	NO	YES	NO	III	YES	NO	NO
40	503425	T	74	F	YES	NO	NO	YES	YES	NO	NO	III	NO	YES	NO
41	1652639	K	50	F	YES	NO	NO	YES	NO	NO	YES	II	NO	YES	NO
42	235128	G	74	F	NO	YES	YES	NO	YES	NO	NO	III	NO	YES	NO
43	661430	M	62	M	NO	YES	YES	NO	NO	NO	YES	II	YES	NO	NO
44	1773852	PL	60	F	YES	NO	NO	YES	NO	NO	YES	IV	YES	NO	NO
45	1616786	A	63	F	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
46	1619896	B	60	F	YES	NO	NO	YES	NO	NO	YES	III	YES	NO	NO
47	1622288	H	51	F	YES	NO	NO	YES	NO	NO	YES	II	YES	NO	NO
48	807453	K	50	F	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
49	872503	S	81	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
50	1432370	G	72	F	NO	YES	NO	YES	NO	NO	YES	III	NO	YES	NO
51	1566206	S	72	M	NO	YES	NO	YES	NO	NO	YES	II	NO	YES	NO
52	1775246	S	58	F	NO	YES	NO	YES	NO	NO	YES	IV	YES	NO	NO
53	1771049	N	52	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
54	1773823	B	64	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
55	1775263	K	43	M	YES	NO	YES	NO	NO	NO	YES	IV	YES	NO	NO
56	392289	D	77	M	YES	NO	NO	YES	NO	YES	NO	III	NO	NO	YES
57	1723850	M	70	M	NO	YES	NO	YES	YES	NO	NO	III	NO	YES	NO
58	205562	OP	81	M	NO	YES	YES	NO	NO	NO	YES	III	NO	NO	YES
59	516057	S	61	M	YES	NO	YES	NO	NO	YES	NO	III	NO	NO	YES
60	1775103	J	82	M	NO	YES	YES	NO	YES	NO	NO	III	NO	YES	NO
61	1775270	N	73	M	NO	YES	YES	NO	NO	YES	NO	IV	NO	YES	NO
62	1772604	J	32	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
63	1767406	R	52	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
64	1766772	K	84	M	YES	NO	NO	YES	NO	YES	NO	IV	YES	NO	NO
65	621301	RP	75	F	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
66	1773354	B	56	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
67	1772446	N	52	F	YES	NO	YES	NO	NO	YES	NO	IV	YES	NO	NO
68	1763198	M	70	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
69	1771931	G	65	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
70	1768712	M	55	F	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
71	1769217	G	64	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
72	1774172	A	77	M	YES	NO	YES	NO	YES	NO	NO	IV	NO	YES	NO
73	1774005	G	55	F	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
74	1766168	K	60	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
75	1773358	T	63	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
76	1768647	A	64	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
77	582928	AP	65	M	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
78	1773979	R	48	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
79	1365484	VP	59	M	YES	NO	YES	NO	NO	NO	YES	III	NO	NO	YES
80	1680338	M	82	F	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
81	345328	S	69	M	YES	NO	YES	NO	YES	NO	NO	III	NO	NO	YES
82	1774686	M	52	F	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
83	1760687	R	69	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO

S.No.	PSYCHIATRIC COMORBIDITY [M.I.N.I]	PHYSICAL HEALTH [DOMAIN-1]	DOMAIN-1 TRANSFORMED (0-100)	PSYCHOLOGICAL [DOMAIN-2]	DOMAIN-2 TRANSFORMED (0-100)	SOCIAL RELATIONSHIPS [DOMAIN-3]	DOMAIN-3 TRANSFORMED (0-100)	ENVIRONMENT [DOMAIN-4]	DOMAIN-4 TRANSFORMED (0-100)	IPD/ OPD
1	MDD/RDD	20	44	18	50	10	56	24	50	**IPD**
2	MDD/RDD	20	44	16	44	11	69	28	63	**IPD**
3	MDD/RDD	22	56	18	50	11	69	24	50	IPD
4	MDD/RDD	20	44	16	44	10	56	24	50	IPD
5	NONE	22	56	20	56	11	69	26	56	IPD
6	MDD/RDD	20	44	15	38	10	56	24	50	IPD
7	ALCOHOL	20	44	20	56	11	69	28	63	IPD
8	NONE	24	63	20	56	11	69	28	63	IPD
9	ALCOHOL	26	69	20	56	12	75	28	63	IPD
10	NONE	24	63	20	56	11	69	28	63	IPD
11	NONE	24	63	20	56	11	69	28	63	IPD
12	NONE	22	56	20	56	11	69	28	63	IPD
13	NONE	20	44	20	56	11	69	24	50	IPD
14	MDD/RDD	18	38	13	31	8	44	22	44	IPD
15	NONE	24	63	20	56	12	75	30	69	IPD
16	NONE	21	50	20	56	10	56	28	63	IPD
17	NONE	21	50	17	44	9	50	25	56	IPD
18	MDD/RDD	18	38	16	44	10	56	22	44	IPD
19	NONE	15	31	20	56	12	75	24	50	IPD
20	GAD	18	38	18	50	12	75	24	50	IPD
21	GAD	18	38	18	50	12	75	24	50	IPD
22	NONE	26	69	13	31	10	56	23	50	IPD
23	NONE	24	63	17	44	9	50	30	69	IPD
24	NONE	24	63	23	69	11	69	31	75	IPD
25	NONE	18	38	15	38	9	50	26	56	IPD
26	NONE	20	44	20	56	11	69	24	50	IPD
27	NONE	20	44	20	56	11	69	24	50	IPD
28	NONE	21	50	20	56	11	69	32	75	OPD
29	MDD/RDD	20	44	20	56	11	69	30	69	IPD
30	NONE	22	56	20	56	12	75	28	63	IPD
31	GAD	22	56	20	56	11	69	26	56	IPD
32	NONE	20	44	20	56	11	69	24	50	IPD
33	NONE	20	44	20	56	11	69	28	63	IPD
34	GAD	22	56	20	56	11	69	28	63	IPD
35	MDD/RDD	21	50	16	44	10	56	24	50	IPD
36	ALCOHOL	20	44	18	50	10	56	24	50	IPD
37	NONE	24	63	20	56	11	69	28	63	IPD
38	MDD/RDD	18	38	13	31	10	56	28	63	IPD
39	MDD/RDD	20	44	15	38	11	69	28	63	IPD
40	GAD	20	44	20	56	10	56	28	63	IPD
41	NONE	22	56	15	38	11	69	24	50	IPD
42	MDD/RDD	20	44	18	50	11	69	24	50	IPD
43	NONE	24	63	20	56	11	69	28	63	OPD
44	MDD/RDD	18	38	15	38	12	75	30	69	IPD
45	NONE	22	56	20	56	11	69	28	63	IPD
46	NONE	20	44	20	56	11	69	28	63	IPD
47	NONE	24	63	22	69	11	69	28	63	IPD
48	NONE	24	63	22	69	11	69	28	63	IPD
49	NONE	20	44	20	56	12	75	28	63	IPD
50	GAD	20	44	16	44	11	69	28	63	IPD
51	NONE	24	63	20	56	11	69	28	63	OPD
52	MDD/RDD	20	44	16	44	11	69	24	50	IPD
53	NASA	24	63	22	69	11	69	28	63	IPD
54	MDD/RDD	22	56	18	50	11	69	24	50	IPD
55	NASA	20	44	20	56	10	56	24	50	IPD
56	ALCOHOL	20	44	22	69	10	56	28	63	IPD
57	ALCOHOL	22	56	22	69	12	75	28	63	IPD
58	MDD/RDD	22	56	18	50	12	75	24	50	IPD
59	NONE	22	56	22	69	12	75	28	63	IPD
60	NONE	24	63	22	69	11	69	28	63	IPD
61	ALCOHOL	20	44	20	56	11	69	28	63	IPD
62	NASA	20	44	20	56	12	75	24	50	IPD
63	NASA	20	44	20	56	11	69	28	63	IPD
64	NONE	20	44	22	69	12	75	28	63	IPD
65	GAD	20	44	18	50	11	69	24	50	IPD
66	NONE	20	44	22	69	11	69	28	63	IPD
67	GAD	20	44	18	50	11	69	26	56	IPD
68	NONE	20	44	18	50	11	69	28	63	IPD
69	NONE	20	44	22	69	11	69	28	63	IPD
70	GAD	22	56	20	56	11	69	24	50	IPD
71	MDD/RDD	20	44	20	56	11	69	24	50	IPD
72	NONE	20	44	22	69	11	69	24	50	IPD
73	NONE	20	44	22	69	11	69	28	63	IPD
74	MDD/RDD	20	44	18	50	11	69	24	50	IPD
75	NONE	22	56	20	56	11	69	28	63	IPD
76	NASA	20	44	22	69	11	69	28	63	IPD
77	MDD/RDD	22	56	20	56	11	69	28	63	IPD
78	NONE	20	44	20	56	11	69	28	63	IPD
79	NONE	22	56	20	56	12	75	30	69	IPD
80	MDD/RDD	22	56	18	50	11	69	28	63	IPD
81	MDD/RDD	22	56	18	50	11	69	28	63	IPD
82	NONE	20	44	16	44	11	69	24	50	IPD
83	GAD	20	44	18	50	11	69	28	63	IPD

S.No.	M.R.D. NO.	NAME	AGE (IN YEARS)	SEX	[literate [L]]	ILLITERATE[IL]	[MARRIED[m]	Others[o]	HFrEF	HFmrEF	HFpEF	SEVERITY OF CHF- [NYHA}	DURATION ≤5 YEARS	DURATION 5-10 YEARS	DURATION ≥ 11 YEARS
84	190406	S	68	M	NO	YES	YES	NO	NO	YES	NO	III	NO	NO	YES
85	1692277	A	78	F	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
86	1771696	A	79	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
87	1026202	H	58	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
88	1772632	B	50	M	NO	YES	YES	NO	NO	YES	NO	IV	YES	NO	NO
89	1617685	K	63	F	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
90	1742630	B	68	M	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
91	1271890	A	65	M	NO	YES	NO	YES	YES	NO	NO	III	YES	NO	NO
92	1760913	K	56	M	NO	YES	YES	NO	YES	NO	NO	II	YES	NO	NO
93	1613047	R	64	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
94	1746452	A	61	F	YES	NO	YES	NO	NO	NO	YES	IV	YES	NO	NO
95	1564301	S	52	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
96	1310818	S	70	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
97	931555	K	65	M	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
98	1772612	D	76	F	NO	YES	YES	NO	YES	NO	NO	III	NO	NO	YES
99	1515005	B	74	F	NO	YES	NO	YES	NO	NO	YES	III	YES	NO	NO
100	1147467	S	74	F	NO	YES	YES	NO	NO	NO	YES	III	YES	NO	NO
101	1089818	S	68	F	YES	NO	YES	NO	NO	NO	YES	III	NO	NO	YES
102	1498202	R	63	F	NO	YES	YES	NO	NO	NO	YES	IV	NO	NO	YES
103	1775408	G	49	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
104	1775361	C	74	M	YES	NO	YES	NO	NO	NO	YES	III	NO	YES	NO
105	1332450	R	62	M	YES	NO	YES	NO	YES	NO	NO	III	NO	NO	YES
106	163456	A	70	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
107	1721417	N	52	F	YES	NO	YES	NO	NO	YES	NO	I	YES	NO	NO
108	1768527	A	58	F	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
109	1754810	P	63	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
110	1250208	G	65	F	NO	YES	YES	NO	YES	NO	NO	II	NO	YES	NO
111	885992	S	45	F	NO	YES	YES	NO	YES	NO	NO	III	NO	YES	NO
112	1346309	RL	74	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
113	1768910	D	72	M	YES	NO	YES	NO	NO	NO	YES	III	YES	NO	NO
114	1775552	RR	68	F	NO	YES	YES	NO	YES	NO	NO	I	YES	NO	NO
115	617588	RN	65	M	YES	NO	YES	NO	YES	NO	NO	IV	NO	YES	NO
116	218814	G	75	M	YES	NO	YES	NO	YES	NO	NO	I	NO	NO	YES
117	1068446	S	68	M	YES	NO	YES	NO	NO	YES	NO	III	YES	NO	NO
118	441355	H	66	M	NO	YES	NO	YES	YES	NO	NO	II	NO	YES	NO
119	1200257	J	42	M	YES	NO	YES	NO	YES	NO	NO	I	YES	NO	NO
120	336680	V	48	M	YES	NO	YES	NO	YES	NO	NO	I	NO	YES	YES
121	1714399	S	47	M	YES	NO	YES	NO	NO	NO	YES	I	YES	NO	NO
122	702878	K	60	F	YES	NO	YES	NO	NO	NO	YES	I	NO	YES	NO
123	1710263	D	64	M	NO	YES	YES	NO	YES	NO	NO	III	NO	NO	YES
124	1774737	N	52	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
125	870255	K	53	F	NO	YES	YES	NO	NO	YES	NO	III	YES	NO	NO
126	1773299	M	80	M	NO	YES	YES	NO	YES	NO	NO	IV	YES	NO	NO
127	1769150	B	72	F	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
128	1775217	PK	48	F	YES	NO	YES	NO	NO	YES	NO	III	YES	NO	NO
129	1770925	D	62	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
130	1775260	A	62	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
131	1771498	R	58	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
132	1774017	S	39	M	YES	NO	YES	NO	NO	YES	NO	II	YES	NO	NO
133	1773131	S	34	M	YES	NO	NO	YES	YES	NO	NO	III	YES	NO	NO
134	1772990	S	69	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
135	1770869	S	58	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
136	1494691	R	77	M	YES	NO	YES	NO	NO	NO	YES	III	NO	NO	YES
137	1629777	H	60	F	NO	YES	NO	YES	YES	NO	NO	III	YES	NO	NO
138	1771344	B	66	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
139	1773359	K	72	F	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
140	1268122	S	78	F	NO	YES	YES	NO	YES	NO	NO	IV	NO	YES	NO
141	882677	P	77	M	NO	YES	YES	NO	YES	NO	NO	IV	NO	YES	NO
142	1168787	S	63	M	YES	NO	YES	NO	NO	YES	NO	II	NO	YES	NO
143	1775256	G	65	M	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
144	1003958	A	76	M	YES	NO	NO	YES	YES	NO	NO	IV	NO	NO	YES
145	1765392	B	74	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
146	1175946	S	49	M	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
147	1773500	C	65	M	NO	YES	YES	NO	NO	YES	NO	III	YES	NO	NO
148	165948	DR	85	M	NO	YES	YES	NO	YES	NO	NO	III	NO	YES	NO
149	1775116	S	57	F	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
150	1767856	R	34	F	YES	NO	YES	NO	YES	NO	NO	IV	YES	NO	NO
151	1760329	MR	78	M	YES	NO	NO	YES	NO	YES	NO	IV	NO	YES	NO
152	1759685	D	80	F	YES	NO	NO	YES	YES	NO	NO	IV	NO	NO	YES
153	1752211	R	76	M	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
154	1586335	S	76	F	YES	NO	NO	YES	NO	NO	YES	IV	NO	NO	YES
155	1776386	R	58	F	YES	NO	YES	NO	NO	YES	NO	III	YES	NO	NO
156	1359323	S	45	F	YES	NO	YES	NO	YES	NO	NO	IV	NO	YES	NO
157	1141855	M	80	M	YES	NO	NO	YES	NO	YES	NO	III	YES	NO	NO
158	1114821	M	70	M	YES	NO	NO	YES	NO	YES	NO	IV	YES	NO	NO
159	460950	T	34	M	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
160	190182	N	62	F	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
161	739364	J	63	M	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
162	748552	S	66	F	YES	NO	NO	YES	NO	NO	YES	II	NO	YES	NO
163	1010628	S	30	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
164	1619178	M	59	M	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
165	1436471	V	54	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
166	1461873	B	66	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO

S.No.	PSYCHIATRIC COMORBIDITY [M.I.N.I]	PHYSICAL HEALTH [DOMAIN-1]	DOMAIN-1 TRANSFORMED (0-100)	PSYCHOLOGICAL [DOMAIN-2]	DOMAIN-2 TRANSFORMED (0-100)	SOCIAL RELATIONSHIPS [DOMAIN-3]	DOMAIN-3 TRANSFORMED (0-100)	ENVIRONMENT [DOMAIN-4]	DOMAIN-4 TRANSFORMED (0-100)	IPD/ OPD
84	MDD/RDD	24	63	20	56	11	69	28	63	IPD
85	GAD	20	44	18	50	11	69	28	63	IPD
86	NONE	22	56	22	69	11	69	28	63	IPD
87	ALCOHOL	24	63	22	69	11	69	28	63	IPD
88	NONE	20	44	20	56	11	69	28	63	IPD
89	GAD	20	44	18	50	11	69	26	56	IPD
90	NASA	20	44	20	56	11	69	28	63	IPD
91	NASA	21	50	20	56	12	75	28	63	IPD
92	NONE	24	63	24	75	12	75	30	69	IPD
93	NONE	24	63	20	56	11	69	30	69	IPD
94	GAD	20	44	18	50	11	69	24	50	IPD
95	GAD	22	56	16	44	10	56	24	50	IPD
96	NONE	24	63	22	69	11	69	28	63	OPD
97	GAD	22	56	20	56	11	69	30	69	IPD
98	MDD/RDD	20	44	18	50	11	69	24	50	IPD
99	MDD/RDD	20	44	18	50	11	69	28	63	IPD
100	NONE	24	63	22	69	11	69	30	69	IPD
101	NONE	20	44	18	50	10	56	28	63	IPD
102	NONE	20	44	20	56	12	75	28	63	IPD
103	NASA	18	38	20	56	11	69	24	50	IPD
104	NONE	22	56	22	69	11	69	28	63	IPD
105	MDD/RDD	20	44	18	50	11	69	28	63	IPD
106	GAD	20	44	20	56	11	69	24	50	IPD
107	NONE	24	63	22	69	11	69	30	69	OPD
108	MDD/RDD	20	44	18	50	11	69	28	63	IPD
109	GAD	20	44	20	56	11	69	24	50	IPD
110	NONE	21	50	20	56	11	69	28	63	OPD
111	NONE	20	44	22	69	12	75	28	63	OPD
112	MDD/RDD	24	63	20	56	11	69	28	63	OPD
113	MDD/RDD	20	44	20	56	11	69	28	63	OPD
114	NONE	22	56	20	56	11	69	28	63	OPD
115	MDD/RDD	18	38	18	50	11	69	24	50	IPD
116	NONE	20	44	20	56	11	69	30	69	OPD
117	NONE	20	44	22	69	11	69	28	63	OPD
118	NONE	20	44	22	69	11	69	30	69	OPD
119	NONE	24	63	24	75	12	75	30	69	OPD
120	NONE	24	63	22	69	12	75	30	69	OPD
121	NONE	24	63	24	75	12	75	30	69	OPD
122	NONE	20	44	18	50	12	75	28	63	OPD
123	ALCOHOL	20	44	22	69	12	75	30	69	IPD
124	NONE	21	50	20	56	12	75	28	63	IPD
125	MDD/RDD	18	38	16	44	12	75	24	50	IPD
126	ALCOHOL	18	38	20	56	12	75	28	63	IPD
127	GAD	20	44	18	50	12	75	28	63	IPD
128	NONE	22	56	20	56	12	75	28	63	IPD
129	NONE	20	44	22	69	12	75	30	69	IPD
130	MDD/RDD	18	38	16	44	10	56	28	63	IPD
131	NASA	18	38	22	69	11	69	29	69	IPD
132	NONE	24	63	22	69	12	75	30	69	OPD
133	NONE	22	56	20	56	11	69	30	69	IPD
134	NONE	20	44	22	69	11	69	30	69	IPD
135	NONE	24	63	18	50	11	69	30	69	IPD
136	MDD/RDD	20	44	20	56	11	69	30	69	IPD
137	GAD	20	44	18	50	11	69	28	63	IPD
138	NONE	22	56	24	75	11	69	30	69	OPD
139	NONE	18	38	20	56	11	69	28	63	IPD
140	GAD	18	38	18	50	11	69	28	63	IPD
141	GAD	18	38	18	50	11	69	28	63	IPD
142	NONE	22	56	22	69	12	75	30	69	IPD
143	NONE	24	63	18	50	11	69	28	63	IPD
144	MDD/RDD	18	38	16	44	11	69	28	63	IPD
145	NONE	18	38	20	56	11	69	30	69	IPD
146	PANIC	20	44	18	50	11	69	30	69	IPD
147	MDD/RDD	20	44	18	50	11	69	30	69	IPD
148	NONE	18	38	20	56	11	69	30	69	IPD
149	NONE	18	38	20	56	11	69	30	69	IPD
150	NONE	18	38	20	56	11	69	28	63	IPD
151	NONE	20	44	20	56	11	69	28	63	IPD
152	GAD	18	38	18	50	11	69	28	63	IPD
153	NONE	20	44	22	69	11	69	30	69	OPD
154	MDD/RDD	18	38	16	44	11	69	24	50	IPD
155	NONE	20	44	22	69	12	75	30	69	IPD
156	NONE	18	38	20	56	11	69	30	69	IPD
157	MDD/RDD	20	44	20	56	11	69	30	69	IPD
158	NASA	20	44	20	56	11	69	30	69	IPD
159	ALCOHOL	20	44	20	56	11	69	30	69	OPD
160	GAD	20	44	20	56	11	69	30	69	IPD
161	NONE	22	56	20	56	12	75	30	69	OPD
162	NONE	22	56	20	56	12	75	28	63	IPD
163	NONE	24	63	24	75	12	75	30	69	OPD
164	NONE	22	56	20	56	12	75	30	69	OPD
165	NONE	24	63	22	69	12	75	30	69	OPD
166	NONE	22	56	20	56	11	69	28	63	OPD

S.No.	M.R.D. NO.	NAME	AGE (IN YEARS)	SEX	[literate [L]]	ILLITERATE[IL]	[MARRIED[m]	Others[o]	HFrEF	HFmrEF	HFpEF	SEVERITY OF CHF- [NYHA}	DURATION ≤5 YEARS	DURATION 5-10 YEARS	DURATION ≥ 11 YEARS
167	1340870	S	49	F	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
168	1603674	S	59	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
169	1361157	S	54	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
170	399831	K	59	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
171	1262731	L	65	F	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
172	1514343	S	75	M	YES	NO	NO	YES	NO	NO	YES	III	NO	YES	NO
173	1561685	J	64	M	YES	NO	NO	YES	YES	NO	NO	III	YES	NO	NO
174	558585	SR	56	M	YES	NO	NO	YES	NO	NO	YES	II	YES	NO	NO
175	548232	S	56	M	YES	NO	YES	NO	NO	NO	YES	II	YES	NO	NO
176	1701357	G	49	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
177	1668419	P	51	M	YES	NO	YES	NO	YES	NO	NO	I	YES	NO	NO
178	1194252	B	58	F	NO	YES	YES	NO	YES	NO	NO	III	YES	NO	NO
179	1127234	S	48	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
180	1717691	P	48	M	YES	NO	YES	NO	YES	NO	NO	III	YES	NO	NO
181	700712	AP	63	F	NO	YES	NO	YES	YES	NO	NO	III	YES	NO	NO
182	669134	RS	53	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
183	1449110	S	60	M	YES	NO	YES	NO	YES	NO	NO	I	YES	NO	NO
184	1362283	H	70	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
185	543064	A	74	M	YES	NO	YES	NO	NO	YES	NO	II	NO	YES	NO
186	1734234	RN	62	M	NO	YES	YES	NO	YES	NO	NO	I	YES	NO	NO
187	1741462	B	65	M	NO	YES	YES	NO	YES	NO	NO	II	YES	NO	NO
188	1695844	A	59	M	YES	NO	YES	NO	YES	NO	NO	II	NO	YES	NO
189	1258404	J	55	F	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
190	697370	V	66	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
191	586096	AS	73	M	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
192	196527	K	68	F	YES	NO	YES	NO	YES	NO	NO	III	NO	YES	NO
193	1541118	G	58	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
194	1639199	BM	64	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
195	1511734	M	51	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
196	1777009	R	55	F	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
197	1283675	K	62	F	NO	YES	YES	NO	YES	NO	NO	II	YES	NO	NO
198	940991	S	38	M	YES	NO	YES	NO	NO	NO	YES	II	NO	YES	NO
199	1246757	M	75	M	YES	NO	YES	NO	YES	NO	NO	II	YES	NO	NO
200	1746830	J	57	M	YES	NO	YES	NO	YES	NO	NO	I	NO	NO	YES

S.No.	PSYCHIATRIC COMORBIDITY [M.I.N.I]	PHYSICAL HEALTH [DOMAIN-1]	DOMAIN-1 TRANSFORMED (0-100)	PSYCHOLOGICAL [DOMAIN-2]	DOMAIN-2 TRANSFORMED (0-100)	SOCIAL RELATIONSHIPS [DOMAIN-3]	DOMAIN-3 TRANSFORMED (0-100)	ENVIRONMENT [DOMAIN-4]	DOMAIN-4 TRANSFORMED (0-100)	IPD/ OPD
167	NONE	24	63	21	63	12	75	28	63	OPD
168	NONE	24	63	21	63	11	69	30	69	OPD
169	NONE	20	44	22	69	11	69	28	63	IPD
170	NONE	24	63	20	56	11	69	28	63	OPD
171	NONE	22	56	20	56	12	75	30	69	OPD
172	NONE	18	38	20	56	11	69	28	63	IPD
173	NONE	20	44	20	56	11	69	28	63	IPD
174	NONE	22	56	20	56	11	69	28	63	OPD
175	NONE	22	56	22	69	11	69	28	63	OPD
176	NONE	20	44	22	69	11	69	30	69	OPD
177	NONE	24	63	20	56	11	69	28	63	OPD
178	MDD/RDD	18	38	16	44	11	69	28	63	OPD
179	NONE	20	44	20	56	11	69	30	69	OPD
180	NONE	20	44	22	69	11	69	30	69	OPD
181	NONE	18	38	18	50	10	56	24	50	OPD
182	NONE	24	63	22	69	10	56	30	69	OPD
183	NONE	24	63	22	69	10	56	28	63	OPD
184	NONE	22	56	20	56	10	56	28	63	OPD
185	NONE	20	44	20	56	10	56	24	50	OPD
186	NONE	22	56	20	56	10	56	30	69	OPD
187	ALCOHOL	24	63	20	56	10	56	28	63	OPD
188	NONE	24	63	22	69	10	56	28	63	OPD
189	NONE	24	63	22	69	10	56	30	69	OPD
190	NONE	22	56	20	56	10	56	30	69	OPD
191	GAD	18	38	18	50	10	56	28	63	OPD
192	NONE	20	44	20	56	10	56	28	63	OPD
193	NONE	20	44	22	69	10	56	28	63	OPD
194	NONE	22	56	20	56	10	56	30	69	OPD
195	NONE	24	63	22	69	10	56	30	69	OPD
196	GAD	22	56	20	56	10	56	28	63	OPD
197	NONE	20	44	20	56	10	56	28	63	OPD
198	NONE	24	63	22	69	10	56	30	69	OPD
199	MDD/RDD	22	56	18	50	10	56	28	63	OPD
200	NONE	24	63	20	56	10	56	28	63	OPD

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(27)

No. BFUHS/2K23p-TH/ 13225 Date 29/12/23

The Principal
Dayanand Medical College & Hospital
Ludhiana

Subject:: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 25.09.2023 has approved the plan of thesis of **Prikshit Goel**, a student of your college for **MD General Medicine** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Prevalence of psychiatric co-morbidities and the impact on quality of life in patients with chronic heart failure .

Supervisor
Dr. Sandeep Chhabra
Assoc. Professor
Dept. of Medicine

Co-Supervisor:-
Dr. Rupesh Chaudhary
Professor
Dept. of Psychiatry

Co-Supervisor:-
Dr. Shibba Takkar Chhabra
Professor
Dept. of Cardiology

The student may submit the thesis in triplicate alongwith the plan in triplicate also, to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She may be directed to attach a photocopy of this letter with the forwarding letter while submitting thesis in the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic, if any.

Controller of Examinations

Note :
1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED IN

PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MD

In

GENERAL MEDICINE

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

AUGUST, 2022

DR. PRIKSHIT GOEL

DEPARTMENT OF GENERAL MEDICINE
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF THESIS

Title	PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE
For the degree of	MD General Medicine
Name of the candidate	Dr. Prikshit Goel
Supervisor	Dr. Sandeep Chhabra, Associate Professor, Department of medicine, DMCH, Ludhiana
Co-Supervisor	Dr. Rupesh Chaudhary, Professor, Department of Psychiatry, DMCH, Ludhiana Dr. Shibba Takkar Chhabra, Professor, Department of Cardiology, DMCH, Ludhiana
Institution	Dayanand Medical College and Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Chronic heart failure, otherwise known as congestive heart failure or heart failure, is an ongoing inability of the heart to pump enough blood through the body to ensure a sufficient supply of oxygen. Psychiatric disorders usually co-exist with such chronic medical illnesses but they often remain undiagnosed. The interplay of demographic characteristics, clinical findings, disease severity and mental health of patients will determine their quality of life.

Aim of Study: To assess the prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure. To study the relationship between the prevalence of psychiatric co-morbidities in patients with chronic heart failure and the severity of Chronic heart failure (as determined by 2D-ECHO, NYHA severity grading)

Materials & methods: This hospital based, cross-sectional study will be conducted in Dayanand Medical College & Hospital, Ludhiana. A total of 200 patients with chronic heart failure will be included in the study. Psychiatric co-morbidities will be assessed using the Mini International Neuropsychiatric Interview Questionnaire and quality of life will be assessed by WHO- Quality of Life Assessment-BREF scale

Clinical Significance: Psychiatric morbidities like anxiety, depression, substance abuse, etc. may exist in the patients with chronic heart failure but they often remain undiagnosed. They contribute significantly to the morbidity in the patients and also affect their quality of life moreover there is paucity of the available data in Indian population regarding prevalence of psychiatric co-morbidities and it the impact on the quality of life in Chronic heart failure patients.

Keywords: Chronic heart failure, depression, anxiety; depression.

(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE"** exist in the Department of General Medicine at Dayanand Medical College and Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

Supervisor

Dr. Sandeep Chhabra
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Co-Supervisor's

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Place: _____

Date: _____

APPROVAL PROFORMA
BY
RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	PRIKSHIT GOEL
Department	General Medicine
Topic of Thesis	PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE
Likely date of appearing in PG examination	May/ June ,2024
Date of enrollment	1/2/2022
Name of Head of Department	Dr. Dinesh Gupta
1) Supervisor **2) Co-Supervisors**	Dr. Sandeep Chhabra Dr. Rupesh Chaudhary, Dr. Shibba Takkar Chhabra
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / ~~No~~

Dr. Sandeep Puri
Chairperson
Research Committee

Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee

Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DR. PRIKSHIT GOEL HOUSE NO. 1173, SECTOR-39, URBAN ESTATE, CHANDIGARH ROAD, LUDHIANA.
2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL
3	COURSE OF STUDY AND SUBJECT	M.D. GENERAL MEDICINE
4	DATE OF ADMISSION OF COURSE	01/02/2022
5	TITLE OF THE TOPIC	PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Heart failure develops when the heart, via an abnormality of cardiac function (detectable or not), fails to pump blood at a rate commensurate with the requirements of the metabolizing tissues or is able to do so only with an elevated diastolic filling pressure.

According to the "progressive model" , heart failure may be considered as a progressive disorder that starts from a trigger, or "index event", that damages the heart muscle and consequently impairs cardiac myocytes, therefore reducing the myocardium's ability to fill with or eject blood, and finally precluding the heart from contracting normally. This inciting event may have a sudden onset (e.g. myocardial infarction) or a gradual or insidious onset (e.g. haemodynamic pressure or volume overloading), or it may be hereditary. Regardless of the etiology, the consequence is a decline in pump function.

An old definition for HFpEF was "diastolic' heart failure", as opposed to "systolic" heart failure that corresponded to HFrEF. However, the term diastolic heart failure was replaced by HFpEF given that diastolic dysfunction of the left ventricle may also characterise HFrEF. On the other hand, the term systolic heart failure was substituted by HFrEF given that subtle abnormalities of systolic function may be also found in patients with HFpEF.

Psychiatric comorbidity appears in a significant minority of patients hospitalized for HF and may affect their clinical and economic outcomes. The associations between psychiatric comorbidity and use of inpatient care are likely to be an underestimate, because psychiatric illness is known to be underdetected in older adults and in hospitalized medical patients. The mental health of the patient plays pivotal role in their overall prognosis and outcome. The interplay of demographic characteristics, clinical findings, disease severity and mental health of the patients will determine their quality of life. This study will aim to determine the prevalence of psychiatric co-morbidities and it the impact on the quality of life in Chronic heart failure patients, also to study the

relationship between the prevalence of psychiatric co-morbidities and severity of chronic heart failure which will be assessed based on 2D-ECHO and NYHA grading.

Psychiatric disorders contribute to the overall outcome of the patient as well as have their implication on their quality of life. The prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure. Such chronic ailment also influences the quality of life of the patients, in its physical, emotional, financial and social domains. There is paucity of the available data in Indian population regarding prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure in Indian population. Only a few studies till date in an Indian set-up discuss the interconnection, correlations and association of psychiatric diagnosis in a medical illness. Our study will assess prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure. Also the relationship between the prevalence of psychiatric co-morbidities and severity of chronic heart failure (assessed on the basis of 2D-ECHO and NYHA grading) will be determined.

6.2 REVIEW OF LITERATURE

According to study done by Debra K Moser:

Investigators have demonstrated that quality of life is more severely impaired in heart failure than it is in several other common chronic diseases including diabetes, arthritis, chronic lung disease, or angina.[1] The consequences of impaired quality of life are seen not only in terms of the negative impact on daily social, domestic, work, and leisure activities [2-7], but also in terms of the impact on risk for heart failure rehospitalizations and death.[8,9]

Heart failure patients have higher levels of depression and anxiety than other cardiac patients.[10] As many as one-third of hospitalized heart failure patients are depressed.[10,11] Both anxiety [12,13] and depression[14,15] have been linked independently to recurrent cardiac events and increased mortality in post-MI patients, but few investigators have studied the impact of these emotions in patients with heart failure. In the few investigations that have been conducted among patients with heart failure, there have been conflicting findings about the relationship between dysphoria, and morbidity or mortality.

Most other investigators, in contrast, have reported that anxiety or depression were associated with poorer outcomes including decline in functional status, rehospitalizations, death, and nonfatal MI in heart failure patients and in cardiac patients with low ejection fractions.[11,16-19] These conflicting findings may in part be explained by the inclusion of multiple psychosocial variables in some studies.

The body of literature briefly reviewed here, combined with the larger literature on the link between psychosocial variables and general cardiac disease strongly suggests that psychosocial factors, specifically anxiety, depression, social support and quality of life are related, independent of medical risk factors, to morbidity and mortality in patients with heart failure.

Rebecca L. Dekker, Terry A. Lennie, Lynn V. Doering, Misook L. Chung, et al found:

Patients with HF frequently report symptoms of anxiety.1 Anxiety is a negative emotion that occurs in response to perceived threats. Sources of anxiety can be internal or from outside sources, and perceived threats can be real or imagined. On average, patients with HF have much higher anxiety levels than healthy older adults.[20,21] Surprisingly few researchers have examined the relationship between anxiety and health outcomes in patients with HF. However, several researchers have reported that the presence of anxiety symptoms is an independent predictor of worsening functional status, [22] poorer health-related quality of life, [23] and more frequent re-hospitalizations.

In addition to experiencing anxiety symptoms, one-third of all patients with heart failure (HF) experience depressive symptoms, which increase the risk for both poor health-related quality of life [22-26] and shorter event-free survival.[25] Depressive symptoms can be defined as symptoms of anhedonia or low mood, accompanied by negative physical symptoms related to activity, appetite, and sleep and/or negative cognitive symptoms related to ability to concentrate, low self-worth, and pessimism about the future. Depressive symptoms may exist with or without the presence of clinical depression, [27] but they may differ from clinical depression in the number, combination, and duration of symptoms, and in the degree to which symptoms interfere with daily functioning.

It is possible that many patients with HF have co-existing symptoms of anxiety and depression, as both are known to coexist in individuals with and without chronic disease.[28] However, there has been little systematic quantitative research about the coexistence of these two symptom domains in patients with HF. In a recent systematic review of qualitative research, [29] patients with HF and depressive symptoms disclosed that they were anxious about many things, including: the future, comorbidities, the unpredictable nature of HF, pain, hospital readmissions, medical procedures, the likelihood of a shortened life span, and the possibility of dying in the middle of the night. One patient with HF described his fears about an uncertain future.[27]

Thomas Rutledge, Veronica A. Reis, Sarah E. Linke et al conducted A Meta-Analytic Review of Prevalence, Intervention Effects, and Associations With Clinical Outcomes of Depression in Heart Failure.[30] This article describes a meta-analysis of published associations between depression and heart failure (HF) in regard to 3 questions: 1) What is the prevalence of depression among patients with HF? 2) What is the magnitude of the relationship between depression and clinical outcomes in the HF population? 3) What is the evidence for treatment effectiveness in reducing depression in HF patients? Key word searches of the Medline and PsycInfo databases, as well as reference searches in published HF and depression articles, identified 36 publications meeting our criteria. Clinically significant depression was present in 21.5% of HF patients, and varied by the use of questionnaires versus diagnostic interview (33.6% and 19.3%, respectively) and New York Heart Association–defined HF severity (11% in class I vs. 42% in class IV), among other factors. Combined results suggested higher rates of death and secondary events (risk ratio = 2.1, 95% confidence interval 1.7 to 2.6), trends toward increased health care use, and higher rates of hospitalization and emergency room visits among depressed patients. Treatment studies generally relied on small samples, but also suggested depression symptom reductions from a variety of interventions. In sum, clinically significant depression is present in at least 1 in 5 patients with HF; however, depression rates can be much higher among patients screened with questionnaires or with more advanced HF. The relationship between depression and poorer HF outcomes is consistent and strong across multiple end points. These findings reinforce the importance of psychosocial research in HF populations and identify a number of areas for future study.

This meta-analysis provides evidence supporting a moderate to high prevalence of depression among patients with HF, an increased risk of mortality and clinical events among HF patients with depressive symptoms, and reductions in depressive symptoms resulting from a

variety of treatment interventions. The relationship between depression and HF is a relatively new but rapidly expanding area of interest in cardiology research. In fact, very few articles were published on this topic before 1990, but the key word searches used identified more than 100 articles published on the topics of depression and other psychosocial factors in HF patients since that time. This increase in research attention coincides with the growth in HF as a health care problem in the U.S. During the past 10 years, HF was the fastest growing form of cardiovascular disease, and accounted for more than 1 million annual hospital admissions and an estimated $60 billion in annual health care expenses.[31] Because patients with HF face high rates of debilitation and mortality, the study of depression characteristics in this population is a critical research area in the pursuit of improved quantity and quality of their lives. Abundant evidence suggests that depression is under-recognized and undertreated in cardiac populations [32-34]; this review begins to address some of the consequences of this treatment milieu.

They conducted a focused quantitative review of the depression and HF literature concerning questions about depression prevalence, clinical outcomes, and treatment impact. This article is among the first to apply meta-analytic methods to the growing field of depression and HF.

Across published studies concerning depression prevalence, associations with clinical outcomes, and changes resulting from treatment interventions, several general conclusions can be drawn:

1) Depression is common among patients with HF, with approximately 1 in 5 patients meeting criteria for major depression based on interview methods, and substantially higher rates of clinically significant depression are present among patients assessed with questionnaires (vs. diagnostic interviews) or with more severe HF;

2) Rates of mortality, clinical events, rehospitalization, and general health care use are markedly higher among HF patients reporting more severe depression;

3) Studies describing depression treatments among HF patients are too small and heterogeneous to permit definitive conclusions regarding intervention effectiveness. These results identify areas requiring further development, raise novel questions, and provide information on depression prevalence that can help researchers design studies with appropriate depression measures and adequately powered sample sizes.

6.3 AIMS AND OBJECTIVES OF THE STUDY

1) To determine the prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure
2) To study the relationship between the prevalence of psychiatric co-morbidities in patients with chronic heart failure and the severity of Chronic heart failure (as determined by 2D-ECHO, NYHA severity grading).

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

The diagnosed cases of CHRONIC HEART FAILURE will be included from the outpatient and inpatient departments of General Medicine and Cardiology of Dayanand Medical College & Hospital, Ludhiana, after taking an informed written consent from the patient.

7.2 METHOD OF COLLECTION OF DATA

This hospital based, cross-sectional study will be conducted in Dayanand Medical College & Hospital, Ludhiana. A total of 200 patients with chronic heart failure will be included in the study.

INCLUSION CRITERIA

Patients of chronic heart failure presenting in the outpatient and inpatient departments of General Medicine and Cardiology, who are above the age of 18 years.

EXCLUSION CRITERIA-

Who are below 18 years.

Who do not consent for the study.

Who have a primary psychiatric illness or are already on psychotropic drugs.

NUMBER OF CASES:

200 CASES

TOOLS

1. **Mini International Neuropsychiatric Interview questionnaire** for the assessment of the psychiatric co-morbidities. The Mini-International Neuropsychiatric Interview (M.I.N.I.) version 5.0.0 is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders. It is divided into 16 modules-identified by letters, each corresponding to a diagnostic category. With an administration time of approximately 15 minutes, it was designed to meet the need for a short but accurate structured psychiatric interview for multi-center clinical trials.

2. The quality of life will be assessed by **WHO-Quality of Life Assessment – BREF scale.** It consists of 26 items. Each item uses a Likert-type five-point scale. These items are distributed in four domains. The 4 domains of QOL are:- (a) physical health and level of independence (seven items assessing areas such as presence of pain and discomfort; dependence on substances or treatments; energy and fatigue; mobility; sleep and rest; activities of daily living; perceived working capacity).(b) psychological well being (eight items assessing areas such as affect, both positive and negative self concept, higher cognitive functions, body image and spirituality). (c) social relationships (three items assessing areas such as social contacts, family support and ability to look after family; sexual activity). (d) environment (eight items assessing areas such as freedom; quality of home environment; physical safety and security and financial status; involvement in recreational activity; health and social care:quality and accessibility).

Domain scores are scaled in a positive direction (higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100.

3. **Socio demographic proforma** will include the name of the patient, age, gender, MRD number, occupation, education, income, marital status, duration of Chronic heart failure, grade/severity, history of smoking, address, contact number, psychiatric illness/s ; name, age, gender, relation of the caregiver, duration of living together, contact number, score on WHOQOL-BREF.

OUTCOME

To assess the prevalence of psychiatric co-morbidities and it the impact on the quality of life in patients with chronic heart failure and to study the relationship between the prevalence of psychiatric co-morbidities and severity of chronic heart failure assessed with respect to 2D-ECHO and NYHA grading).

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ± standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables will be done using Student t-test and Mann Whitney *U* test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and exact test will be used when the expected frequency is less than 5. A probability value (*p* value) less than 0.05 will be considered statistically significant. All statistical calculations were done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3 ?

Yes, Attached herewith

8. LIST OF REFERENCES

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Socio Demographic Proforma

PATIENT PROFILE S. NO.

NAME: AGE/SEX:

MRD NO:

OCCUPATION:

EDUCATION:

INCOME:

SOCIOECONOMIC CLASS:
(MODIFIED KUPPUSWAMY SCALE, 2022)

MARITAL STATUS:

DURATION OF CHRONIC HEART FAILURE:

GRADE/ SEVERITY (DATE ; NYHA, 2D-ECHO)

HISTORY OF SMOKING:

MONTHLY HOSPITAL EXPENSES:

ADDRESS:

CONTACT NO.:

PSYCHIATRIC CO-MORBIDITY IF ANY (ASSESSED BY M.I.N.I)

SCORE (WHOQOLBREF):

Signature of Candidate **Signature of Supervisor**

Mini Neuro-Psychiatric Interview

Patient Name MRD No:-

MODULES	TIME FRAME	MEETS CRITERIA	DSM-IV	ICD-10
A. MAJOR DEPRESIVE EPISODE	Current (past 2 weeks) Recurrent		296.20-296.26 Single 296.30-296.36 Recurrent	F32x F33x
MDE WITH MELANCHOLIC FEATURES	Current (2 weeks)		296.20-296.26 Single 296.30-296.36 Recurrent	F32x F33x
B. DYSTHYMIA	Current (Past 2 years)		300.4	F34.1
C. SUICIDALITY	Current (Past Month) Risk: Low Medium High			
D. MANIC EPISODE	Current Past		296.00-296.06	F30x-F31.9
HAYPOMANIC EPISODE	Current Past		296.80-296.89	F31.8-F31.9/F34.0
E. PANIC DISORDER	Current (Past Month) Lifetime		300.01/300.21	F40.01-F41.0
F. AGORAPHOBIA	Current		300.22	F40.00
G. SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)		300.23	F40.1
H. OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)		300.3	F42.8
I. POSTTRAUMATIC STRESS DISORDER Optional	Current (Past Month)		309.81	F43.1
J. ALCOHOL DEPENDENCE ALCOHOL ABUSE	Past 12 Months Past 12 Months		303.9 305.00	F10.2x F10.1
K. SUBSTANCE DEPENDENCE (Non-alcohol) SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months Past 12 Months		304.00-90/305.20-90 304.00-90/305.20-90	F11.1-F19.1 F11.1-F19.1
L. PSYCHOTIC DISORDERS	Lifetime Current		295.10-295.90/297.1/ 297.3/293.81/293.82/ 293.89/298.8/298.9	F20.xx-F29
MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime Current		296.24/296.34/296.4	F32.3/F33.3/ F30.2/f31.2/f31.5 F31.8/F31.9/F39
M. ANOREXIA NERVOSA	Current (Past 3 Months)		307.1	F50.0
N. BULIMIA NERVOSA	Current (Past 3 Months)		307.51	F50.2
ANOREXIA NERVOSA, BINGE EATING/ PURGING	Current		307.1	F50.0
O. GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)		300.02	F41.1
P. ANTISOCIAL PERSONALITY DISORDER Optional	Lifetime		301.7	F60.2

Signature of Candidate **Signature of Supervisor**

WHO Quality of Life BREF

Patient Proforma

Patient Name: - MRD No:-

	Equations for computing domain scores	Raw score	Transformed scores*	
Domain 1	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=	**4-20**	**0-100**
Domain 2	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		
Domain 3	Q20 + Q21 + Q22 ☐ + ☐ + ☐	=		
Domain 4	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		

Signature of Candidate **Signature of Supervisor**

NYHA HEART FAILURE GRADING

New York Heart Association (NYHA) Classification of Heart Failure

Class	Patient Symptoms
Class I (Mild)	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class II (Mild)	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class III (Moderate)	Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea).
Class IV (Severe)	Unable to carry out any physical activity without discomfort. Symptoms of fatigue, rapid/irregular heartbeat (palpitation) or shortness of breath (dyspnea) are present at rest. If any physical activity is undertaken, discomfort increases.

Signature of Candidate **Signature of Supervisor**

MODIFIED KUPPUSWAMY SCALE

Education of head of family	Score
Profession or honours	7
Graduate or postgraduate	6
Intermediate or post high school diploma	5
High school certificate	4
Middle school certificate	3
Primary school certificate	2
Literate	1
Occupation of head of family	
Profession	10
Semi- profession	6
Clerical, Shop-owner	5
Skilled owner	4
Semi-skilled worker	3
Unskilled worker	2
Unemployed	1
Monthly income of family (2017)	
>41430	12
20715-41429	10
15536-20714	6
10357-15535	4
6214-10356	3
2092-6213	2
<2091	1

Socioeconomic status		Total Score
I	Upper	26-29
II	Upper Middle	16-25
III	Lower Middle	11-15
IV	Upper Lower	5-10
V	Lower	<5

Signature of Candidate **Signature of Supervisor**

INFORMED PATIENT CONSENT

Date: _____

I…….D/o, W/o, S/o……..…… am willing to participate in the study "**PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE**" The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

…… ……

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य "**PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

“PREVALENCE OF PSYCHIATRIC CO-MORBIDITIES AND THE IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ